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Member bank borrowing: a microeconomic approach

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MEMBER BANK BORROWING: A MICROECONOMIC APPROACH

by

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TABLE OF CONTENTS

SCOPE AND PURPOSES OF THE STUDY

Introduction

Banks that are members of the Federal Reserve System have access to the discount window for the purpose of borrowing reserves. A banker in need of reserves can either rediscount short-term commercial, agricultural, industrial or other business paper or he can give his own promissory note secured by Government securities or other eligible paper. Both forms of borrowing have come to be called discounting and the rate at which the borrowing is made the discount rate.

Unlike the direct and predictable effects of open market operations or reserve requirement changes on the quantity of reserves held by the banking system, discounting has imprecise effects. Policy makers can achieve direct and specific quantity changes in reserves by buying or selling Government securities in the open market, or lowering or raising the reserve requirement. With discounting, the policy tool is the discount rate, and it is the response of bankers to changes in the rate which determines the effectiveness of rate changes. When using the discount rate as the tool in effectuating policy, direct control over total reserves is lost since the quantity of reserves actually borrowed must be initiated by the bankers themselves.

Much of the current interest in member bank borrowing centers around this imprecision because of its implications about the effectiveness of monetary policy. The relative importance of its imprecision or

its relative importance as a policy tool depends on the linkage between the monetary sector and the real sector of the economy. Regardless of this question, the effectiveness of any monetary policy action rests first with its impact on the monetary sector of the economy.

If bankers themselves determine the quantity of borrowings, then the impact of changes in the discount rate on the monetary sector of the economy must be evaluated from the bankers' point of view. The attention of this paper is focused on the determinants of borrowing in an attempt to discover what variables influence bankers in their borrowing decisions. Knowledge of these variables and the way bankers respond to changes in them will provide implications about the effectiveness of the discount rate as a tool of monetary policy.

Overview

Early writings on member bank borrowing suggest two basic motives for borrowing: need and profit. According to the need thesis, bankers are reluctant to borrow and look to the discount window as a source of funds only when necessary in meeting normal customer demands for loans and deposits. Bankers borrow "only in case of necessity and endeavor to repay their borrowing as soon as possible (29, p. 20)." Such behavior suggests that interest rates are not a particularly influential factor in the decision to borrow and, specifically, that changes in the discount rate have little effect on the volume of borrowings. Within the context of the need thesis the direction of causation runs the other way. The volume of borrowings determines interest rates. Given a reluctance to borrow, bankers try to reduce their level of indebtedness as their volume

of borrowing increases. They do so by raising loan rates in an effort to reduce the quantity of loans demanded and by selling assets to acquire needed reserves.

At the other extreme, the profit thesis holds that the discount rate is important in determining the volume of borrowing. Bankers borrow in order to profit from rate differences which they can do if the discount rate is below open market and customer loan rates. Even if a need for funds arises from normal customer demands, it is argued that as long as interest rates are above the discount rate, banks stand to profit from borrowing (11, p. 261). The word "need," as used in conjunction with the profit thesis of borrowing, has a somewhat different meaning than when used in conjuction with the need thesis. It can be argued, for example, that any time a deficiency in reserves is present, the banker is in need of reserves. The relevant question is whether the need was artificially created by the potential profit or whether there would have been a need even in the absence of rate differences. Those who hold the need thesis of borrowing intend the word to mean that bankers borrow only when there is no other source, and when the deficiency in reserves is a result of normal day-to-day banking operations.

From more recent writings, the consensus which seems to emerge is that both profit and need influence borrowing behavior. Turner argues that the amount a bank will be willing to borrow is

> . . . determined by the attitudes of the bankers themselves, and by the circumstances in which they work, including business conditions, both National and local, the condition of the individual banks, the needs of their portfolios and the available opportunities, and the relative profitability of borrowing (36, p. 152).

He also argues that tradition against borrowing "is a factor principally to the extent that it sets limits . . . to the amount of borrowing . . . (36, p. 152)."

The works of Polakoff (27) and of Goldfeld and Kane (9) are notable examples of recent attempts to answer the question: Given profit and need as motives for borrowing and reluctance as a deterrent, what role does each play in determining the volume of borrowing?

In Polakoff's "integration thesis," borrowing is viewed from the standpoint of the two opposing forces--profits and reluctance. He uses the term "profits" to mean the difference between the discount rate and the Treasury bill rate or the "least cost" method of obtaining additional reserves for the individual bank. His hypothesis is that the greater this spread, the more likely a bank is to borrow. As the spread becomes larger and larger, however, the banker restrains from additional borrowing and may repay some of his former borrowings. He does this even though a profit is available because his reluctance to borrow increases as the volume of borrowing grows. An increasingly rapid increase in profits is required to overcome this increasing reluctance. At a given spread, the banker adjusts his borrowing in such a way that the marginal disutility of borrowing divided by the marginal utility of profits equals the negative of the spread. This is the necessary condition for the banker to maximize utility.

To test his hypothesis, Polakoff charts the difference between the discount rate and the Treasury bill rate in class intervals of 0.1 precent on the horizontal axis and aggregate borrowings on the vertical

axis. If his hypothesis is correct, then a relatively smaller quantity of borrowings should correspond with a relatively smaller spread. And, if the spread gets sufficiently large, borrowings should decrease as reluctance to borrow overrides profitability in the bankers decision. Polakoff finds for a 5 1/2 year period begining in July, 1953, and ending in January, 1959, that both weekly and monthly data "suggest a curve in which borrowings show a tendency to flatten out with increasing spreads until some point is reached beyond which there is a downturn (27, p. 17)." This is consistent with his theoretical argument and he therefore accepts his hypothesis.

Goldfeld and Kane use regression analysis to test their theoretical hypotheses. In addition to the spread between the discount rate and Treasury bill rate, their theory indicates that both lagged borrowings and unborrowed reserves should be included as independent variables explaining current borrowings. Borrowings in previous periods account for transaction costs which may increase as a result of continuing indebtedness due to Federal Reserve "harrassment." This is more a result of the length of time in debt than the absolute amount of debt currently outstanding, and thus current borrowing should be, in part, a function of past borrowing. Lagged unborrowed reserves are used as an indication of the bank's competitive position in the industry. A bank which continually gains reserves through the normal clearing process is in a better position than one which continually loses reserves. Those that gain reserves are less likely to turn to the discount window to obtain additional reserves.

Several equations for each of four classes of banks--New York, Chicago, other Reserve city and country--are estimated. The equations

differ only in the number of lags and powers of variables included. For example, the three equations for the New York class of banks each have weekly averages of daily borrowings as their dependent variable, and various forms of the Treasury bill rate minus the discount rate, the change in unborrowed reserves and lagged borrowings as dependent variables. Goldfeld and Kane find that these variables explain at least 75 percent of the variation in borrowings for each class of banks (9, p. 511).

Form and Scope of the Model

The theoretical model in this study derives from the work of Luckett (18) and encompasses that of Goldfeld and Kane. Luckett's primary concern is with the availability doctrine as evidenced by banks not only raising loan rates but also engaging in nonprice credit rationing during periods of monetary restraint. In developing his hypotheses, Luckett presents a model of the individual bank. The model of the individual bank presented in this study is an extension of Luckett's original one.

In their article, Goldfeld and Kane state that "Since the objective functions . . . are likely to vary from bank to bank, a proper test of the thoery . . . would make use of data recording the responses of *individual* banks. Unfortunately, such data are not available (9, p. 507)." The theoretical part of this study is not closely akin to Goldfeld and Kane's but the variables which they find to be inportant in the banker's borrowing decision are included in the variables found

here. Since individual bank data are used to estimate various forms of the borrowing equation, three of these equations are those of Goldfeld and Kane. A more detailed discussion of similiarities and differences between the two models appears in Chapter III.

The model in this study begins by assuming that bankers possess, at any point in time, a desired level of borrowings or that level which the banker would choose given his utility function and complete knowledge of fluctuations in his reserve needs. There also exists an actual level of borrowings or that level which would prevail in the absence of any borrowing activity. The banker responds to any difference in these two levels either by borrowing or repaying former borrowings depending on whether his desired level is above or below his actual level of borrowings. The banker is assumed to be further influenced in his decision to borrow by Federal Reserve surveillance. This is intended to account for any deterrent to borrowing that Reserve officials may impose on the borrowing banks. Thus, the principal hypothesis of this study is that the individual bank takes action during a given time interval to remove any discrepancy between its desired level of borrowing at the end of an interval and the position that would prevail in the absense of action. In addition, the banker's behavior is, in part, a function of Federal Reserve surveillance.

The banker's desired level of borrowings is not an observable quantity and it must be estimated. This is accomplished by deriving the desired level of borrowings from the extended model of the individual bank developed by Luckett.

Plan of the Study

In Chapter II the theoretical model is developed along with hypotheses concerning specific parameters of the regression equations. The statistical results are presented in Chapter III, and the conclusions and policy implications in Chapter IV.

THE THEORETICAL DETERMINANTS OF BORROWING

The Basic Behavioral Hypothesis

The objective of this chapter is to develop a model of an individual banker's behavior at the discount window. The underlying hypothesis of the model postulates two basic elements which determine this behavior. These are (1) any discrepancy between the banker's desired and actual levels of borrowing and (2) the influence of Federal Reserve surveillance. These variables interact in the following way. During a particular time interval, say t-1 to t, the banker has experienced a change in his reserve position. On the basis of this experience, he formulates a "desired" level of borrowings at t, B_t^*. To be in static equilibrium, his borrowings at t must be B_t^*, and hence his change in borrowings, ΔB, between t-1 and t will equal $B_t^* - B_{t-1}$. Depending upon his ability to achieve equilibrium, his actual change in borrowings between t-1 and t may be a fraction of $B_t^* - B_{t-1}$. Furthermore, ΔB will be modified by any change in Federal Reserve surveillance between t-1 and t since B_t^* depends on a constant amount of surveillance.

It is thus specified that:

$$(1) \quad \Delta B = \delta(B_t^* - B_{t-1}, FS)$$

where: ΔB = change in borrowing between t-1 and t;
B^* = desired level of borrowings;
B = actual level of borrowings;
FS = measure of Federal Reserve surveillance;
t = time subscript.

Changes in borrowings are thus a function, δ, of the difference between the desired and actual level of borrowings and Federal Reserve surveillance. The remainder of this chapter is devoted to specifying these variables.

A Model of the Individual Bank

The determinants of the desired level of borrowing are derived from a model of the individual bank. A simplified bank balance sheet identity can be written as:

$$(2)\quad R + G + L = D + S + T + F + B$$

where: R = reserves;
G = government securities;
L = loans;
D = demand deposits;
S = time and savings deposits;
T = time certificates of deposit;
F = federal funds;
B = borrowings; and $R, G, L, D, S, T, B \geq 0$; $F \gtrless 0$.

If it is assumed that required reserves on demand deposits, time and savings deposits, and time certificates of deposit are fixed percentages of their total, then required reserves are

$$(3)\quad R = (1 - v)D + (1 - w)(S + T)$$

where v and w are one minus the reserve requirements on demand deposits and on time and savings deposits and time certificates of deposit, respectively. If the bank's reserves are equal to its required reserves then R can be eliminated from (2) by substituting R from (3) into (2).

$$(4)\quad (1 - v)D + (1 - w)(S + T) + G + L = D + S + T + F + B.$$

Simplifying this expression results in

$$(5)\quad G + L = vD + w(S + T) + F + B.$$

It is assumed that the banker wishes to maximize the utility function,

(6) $U = u(\pi, \Lambda, \tau, B)$,

containing profits (π), liquidity (Λ), soundness (τ), and borrowing (B). The task in this section is to specify these arguments.

Profits

A bank's profit function can be written as the sum of returns on its earning assets minus its costs. If it is assumed that costs of servicing deposits and loans are fixed, then the principal variable costs are those associated with interest paid on time and savings deposits and time certificates of deposit. Thus,

(7) $\pi = rG + \alpha L - dB - fF - eS - gT - K$

where r, α, d, f, e, and g are the rates on government securities, loans, borrowings, federal funds, time and savings deposits, and time certificates of deposit respectively and K is fixed costs.

Liquidity

The banker's primary concern with liquidity arises from his desire to meet future deposit withdrawals and customer loan demands. He is, in fact, legally liable for deposits and desirous of accommodating customer loan requests due to past or possible future customer relations (14). Certain other obligations which will come due between now and his planning horizon must also be accounted for. These are his borrowings from the Federal Reserve, and his purchases of federal funds. That is, at any given point in time, the banker expects future changes in both deposits and loan requests and the necessity of repaying any debt he has incurred

through purchasing federal funds or discounting. The formulation of expectations and preparation for these future developments determine his liquidity position.

Consider first the possibility of preparing for necessary future uses of funds by asset management. The banker at time t manages his asset portfolio based on his experience with the seasonal and cyclical peculiarities of his bank. He has some set of subjective expectations concerning the value of deposits and depositor loan demand, and a knowledge of any debt that must be repaid at some time in the future, say t + u. He prepares for the accommodation of these by selecting the level of those items in his balance sheet over which he has control.

As an example, consider a loan request at t. The banker not only considers the profitability of granting the loan but also his future need for funds between t and the time the present loan, if granted, would mature. The granting of the loan at t reduces the bank's resources for the maturity of the loan. This future need for funds is what the banker must prepare for at t and he does so, in part, by either granting or refusing the loan request. And, since the loan is requested for a given maturity, the banker must consider his need for funds during the entire term of the loan. The time horizon, u, is thus determined when a loan of a given maturity is requested. The probability that an additional loan will be requested, or a deposit paydown will occur before the current loan has matured, is based on the expectations of the banker and is a determining factor in the decision to grant or refuse the present loan request.

The liquidity position of the bank depends not only upon the asset side of the balance sheet, but also on liability items. The banker has

some control over the level of particular liabilities and may take action to increase these, given a deposit paydown or the necessity of his own debt repayment. His efforts in so doing are directed at maintaining or increasing the aggregate level of these liabilities. It is possible, for example, for the banker to repay federal funds he may have purchased prior to a particular point in time and at the same time buy more. Based on his decision as to the quantity he will buy, this particular liability will increase, decrease or remain the same. This is also true when borrowing from the Federal Reserve. At any time t, the banker's borrowings will be at a level determined by his action prior to that time. If he expects deposit withdrawals or increased customer loan demand during a given time interval, he must provide not only for accommodating these but also for those borrowings which come due during the interval. Again the possibility exists for the banker to keep borrowings at the level of time t or to increase them.

This type of action is especially true for large banks. Deposit outflows can be met on the liability side of the bank's balance sheet by selling time certificates of deposit. This has the effect of offsetting uncontrolled deposit outflows by creating new deposits. The banker can command these deposits by varying the rate of return offered. A banker may thus view the creation of deposits through the issuance of time certificates of deposit as a source of funds, and hence, as an instrument to be used in adjusting the bank's position.

In defining the banker's expectations about future deposit behavior, gaining deposits through issuing time certificates of deposit, and at the same time meeting his legal obligations in paying other deposit holders

on demand, could be included. For the purpose of examining reserve period adjustments, the distinction between the types of deposit change is necessary. A clearer distinction is between sources and uses of funds. Time certificates of deposit are a source; other deposits are a use. Of course, a source is a negative use, but in general, the distinction is between those items over which the banker has control (source) and those over which he does not (use). In this context, the subjective expectations formulated by a banker about future changes in deposits refer only to those deposits which are outside the control of the banker. Also, since loan requests are not determined by the banker and therefore not under his control, it is taken as given that he arranges those items which he can control in a sensible fashion so that he can accommodate expected loan requests.

The levels of the three "controlled liabilities"--time certificates of deposit, borrowing, and federal funds--are determined by decisions of the banker prior to any particular point in time that the bank's balance sheet is examined. If they have been used as a means of adjusting to short-run reserve needs, they are potential uses of the bank's funds at each point in time thereafter. The time interval t to t + u, is assumed to be sufficiently long so that the total of current amounts of borrowings, federal funds and time certificates of deposit are due during the interval.

This assumption is not as imposing as it might at first appear. The fact that the bank's outstanding issue of time certificates of deposit and its current debt either with the Federal Reserve or other banks come due between t and t + u does not negate the possibility of the banker obtaining funds from these three sources during the time interval. He can

sell a new issue of time certificates of deposit and enter a new borrowing agreement with the Federal Reserve or with other banks.

Thus in considering a loan of, say, six months' maturity at time t, the banker must provide for repayment of these three liability items which come due between t and six months hence. If the banker elects to keep these at their present level, they have exactly the same effect on liquidity during the time interval, t to t + u, as they did at t.

Assume, then, that the banker at time t has some set of subjective expectations concerning the value at time t + u of those deposits over which he has no control, and of depositor loan demand. The distribution of changes in deposits and changes in customer loan demand is assumed normal with mean and variance known. To get a measure of bank liquidity, sources of funds are contrasted with expected uses. According to the measure of liquidity used here, the banker judges the bank's liquidity in terms of his subjective probability that the bank will not be able to accommodate the demands of depositors and borrowers at t + u.

Sources of a bank's liquidity are its liquid assets plus those reserves released by the withdrawal of deposits. Uses are its short-term liability items and loan increases. Specifically, liquidity is defined in the following manner:

$$(8)\quad G_t - T_t - B_t - F_t - E(\Delta L^D - v\Delta D) - \Lambda\sigma = 0$$

where: t = time subscript;
G = government securities;
T = the level of time certificates of deposit;
B = the level of borrowings;
F = the level of federal funds purchased;
ΔL^D = the change in depositor loan demand between t and t + u;
ΔD = the change in deposits between t and t + u;
E = expected value operator;
σ = the standard deviation of the difference $(\Delta L^D - v\Delta D)$;
Λ = the measure of bank liquidity.

Equation (8) gives an expression of liquidity in terms of available sources of funds and potential uses. Since the distribution of expectations is assumed normal with given mean and variance, (8) has as its only unknown, Λ. This is the number of standard deviations from the mean estimate of $(\Delta L^D - v\Delta D)$ by which the banker may err and still meet customer demands from available sources of funds. The banker determines Λ when he decides upon the mix of governments and loans and upon the levels of T, B, and F at time t.

To get a better understanding of this measure of liquidity, consider a banker who chooses to hold at time t that quantity of government securities which just equals his mean estimate of $(\Delta L^D - v\Delta D)$. Also assume that T, B, and F are zero. The only source of reserves is G, and the probability that the actual $(\Delta L^D - v\Delta D)$ is greater than its expected value is equal to 1/2. If the actual value of $(\Delta L^D - v\Delta D)$ is greater than its expected value, the holdings of government securities will not be sufficient to meet these actual demands.

If T, B, and F are not zero at time t, and the banker still chooses to hold that quantity of governments which equals $E(\Delta L^D - v\Delta D)$ then the probability that he will be able to accommodate customer demands and repay his own debt in an orderly and normal fashion between t and t + u is reduced. If the banker takes action to keep T, B, and F at the same level between t and t + u they have no net effect on liquidity. If he increases or decreases them, liquidity decreases or increases respectively.

Three relationships among the variables in expression (8) and the associated probabilities of sources being less than potential uses are:

(9) $\Lambda = -1 \quad G_t - T_t - B_t - F_t < E(\Delta L^D - v\Delta D) \quad P(G_t - T_t - B_t - F_t < \Delta L^D - v\Delta D) \doteq 5/6;$

(10) $\Lambda = 0 \quad G_t - T_t - B_t - F_t = E(\Delta L^D - v\Delta D) \quad P(G_t - T_t - B_t - F_t < \Delta L^D - v\Delta D) = 1/2;$

(11) $\Lambda = 1 \quad G_t - T_t - B_t - F_t < E(\Delta L^D - v\Delta D) \quad P(G_t - T_t - B_t - F_t < \Delta L^D - v\Delta D) \doteq 1/6.$

Clearly, the larger is Λ, the smaller is the probability that the bank will not be able to meet the demands of its customers at $t + u$.

Soundness

Bank soundness, as opposed to liquidity, is designed to be a measure of the bank's position under conditions of unexpected changes in the bank's liabilities and unexpected changes in the value of the bank's assets. It is the bank's position under conditions of forced liquidation and is reckoned by contrasting an assumed maximum decline in each of the bank's liabilities with an assumed realizable value of each of its assets. Since the possibility of such occurrences is dismissed by the banker, he does not make provision for them in his consideration of liquidity.

This is not to say that the banker does not take into account the possibility of unexpected events occurring. The subjective probability assigned to a particular future event by a banker may be very small, and yet circumstances may change to such an extent that the event actually happens. The idea behind the soundness provision is to assure the continued existence of the bank in the event of an unexpected, but possible, national or local contraction beyond the banker's expectation.

Bank examiners are concerned with protecting depositors in the event of a forced liquidation of the bank. They are interested in the

condition of a bank under conditions of unexpected but possible contractions of the local or national economy. To evaluate the bank under such conditions, bank examiners use the Federal Reserve's Form for Analyzing Bank Capital which requires capital sufficient to cover a weighted difference of liabilities and assets. Even though capital adequacy is the primary concern of examiners in using this form, bankers tend to adjust their asset structure to make their capital adequate rather than altering their capital structure to conform to their assets. The calculation of capital adequacy and the weights used in the Form are supposedly those that give the position of banks in general under conditions of distress. If the weights are not the ones that a banker himself would choose, and yet he adjusts his asset structure to conform to this capital structure, then he is behaving as though the weights implied by the Form are true weights.

The measure of soundness used here derives from the Federal Reserve's Form. It is written as the difference between the realizable value of assets under conditions of distress and an assumed maximum decline of liabilities.

$$(12)\quad \tau = cR + aG + bL - hT - kS - B - F - mD$$

where τ is the measure of bank soundness and c, a, b, h, k, and m are weights, i.e., percentages of the total quantities of assets R, G, and L, held by the bank and obtainable by selling these assets, and percentages of the total quantities of liabilities, T, S, B, F, and D, which the bank may lose under conditions of distress.

Since R is a linear function of D, T, and S it can be eliminated from (12) by defining c, such that:

(13) $cR = m(1 - v)D + h(1 - w)T + k(1 - w)S.$

Substituting (13) into (12) and simplifying results in:

(14) $\tau = aG + bL - mvD - hwT - kwS - B - F.$

By design, soundness measures the impact of remote but possible events on the bank's position at the present time.

Borrowing

Member bank borrowing enters the utility function as an explicit variable and not solely as a determinant of profits, liquidity and soundness, although it will affect these. It is assumed to be unique among the other variables in the bank's balance sheet in that bankers attach a significance to borrowing per se, and not just because of its influence on π, τ, and Λ. This is due to the "tradition against borrowing" or the "reluctance to borrow" generally attributed to bankers. Thus, a banker's decision to borrow is not solely based on profit, liquidity, and soundness considerations, but also on the pure disutility of borrowing. It must therefore be included in the utility function as an explicit variable.

Determinants of the Desired Level of Borrowings

Having specified the model as one in which the banker maximizes utility and defined each argument in the utility function, the next step is to derive from this model the banker's desired or equilibrium level of borrowings. This is done under the assumptions that the banker has exact knowledge of his reserve needs, that these reserve needs are a result of changes in two particular items of his balance sheet, and that he has four ways to adjust to his needs. Also, differential calculus is used in the

derivation so that changes in balance sheet items are infinitesimally small. This last assumption is relaxed in a later section.

The two situations in which reserve period adjustments are necessary are a result of the banker's increasing his loans or the necessity to meet deposit withdrawals. To meet the need for additional reserves, the banker is assumed to have four available sources. He can acquire additional reserves through asset adjustment by selling government securities or he can increase those liability items over which he has control by borrowing, buying federal funds or selling time certificates of deposit. Given the need for additional reserves and these four means of adjustment, the problem here is to derive a relationship which yields the variables the banker considers in making his decision as to how to adjust to his needs.

The change in utility to a bank given a change in one or all of the arguments in the utility function may be expressed as:

$$(15)\quad du = \frac{\partial u}{\partial \pi}\, d\pi + \frac{\partial u}{\partial \Lambda}\, d\Lambda + \frac{\partial u}{\partial \tau}\, d\tau + \frac{\partial u}{\partial B}\, dB.$$

Assuming K, $E(\Delta L^D - v\Delta D)$, and σ constants, $d\pi$, $d\Lambda$, and $d\tau$ can be expressed in a similar manner:

$$(16)\quad d\pi = \frac{\partial \pi}{\partial G}\, dG + \frac{\partial \pi}{\partial L}\, dL + \frac{\partial \pi}{\partial B}\, dB + \frac{\partial \pi}{\partial F}\, dF + \frac{\partial \pi}{\partial S}\, dS + \frac{\partial \pi}{\partial T}\, dT;$$

$$(17)\quad d\Lambda = \frac{\partial \Lambda}{\partial G}\, dG + \frac{\partial \Lambda}{\partial B}\, dB + \frac{\partial \Lambda}{\partial F}\, dF + \frac{\partial \Lambda}{\partial T}\, dT.$$

$$(18)\quad d\tau + \frac{\partial \tau}{\partial G}\, dG + \frac{\partial \tau}{\partial L}\, dL + \frac{\partial \tau}{\partial T}\, dT + \frac{\partial \tau}{\partial S}\, dS + \frac{\partial \tau}{\partial B}\, dB + \frac{\partial \tau}{\partial F}\, dF + \frac{\partial \tau}{\partial D}\, dD.$$

Using expressions (7), (8), and (14), each of the partial derivatives in (16), (17), and (18) may be evaluated:

$$(19)\quad d\pi = r\,dG + a\,dL - d\,dB - f\,dF - e\,dS - g\,dT;$$

$$(20)\quad d\Lambda = \frac{1}{\sigma}\,dG - \frac{1}{\sigma}\,dB - \frac{1}{\sigma}\,dF - \frac{1}{\sigma}\,dT;$$

$$(21)\quad d\tau = a\,dG = B\,dL - wh\,dT - wk\,dS - dB - dF - mv\,dD.$$

Substitution of $d\pi$, $d\Lambda$ and $d\tau$ from (19), (20), and (21) into (15) gives an expression for the change in total utility as a result of a change in any or all the variables in the bank's balance sheet:

$$\begin{aligned}(22)\quad du = {} & \frac{\partial u}{\partial \pi}(r\,dG + a\,dL - d\,dB - f\,dF - e\,dS - g\,dT) \\ & + \frac{\partial u}{\partial \Lambda}\left(\frac{1}{\sigma}\,dG - \frac{1}{\sigma}\,dB - \frac{1}{\sigma}\,dF - \frac{1}{\sigma}\,dT\right) \\ & + \frac{\partial u}{\partial \tau}(a\,dG + b\,dL - wh\,dT - wk\,dS - dB - dF - mv\,dD) \\ & + \frac{\partial u}{\partial B}\,dB.\end{aligned}$$

By factoring dG, dL, dD, dB, dF, dS, and dT, expression (22) can be written as:

$$\begin{aligned}(23)\quad du = {} & \left(\frac{\partial u}{\partial \pi}\,r + \frac{\partial u}{\partial \Lambda}\,\frac{1}{\sigma} + \frac{\partial u}{\partial \tau}\,a\right)dG + \left(\frac{\partial u}{\partial \pi}\,a + \frac{\partial u}{\partial \tau}\,b\right)dL \\ & + \left(-\frac{\partial u}{\partial \pi}\,d - \frac{\partial u}{\partial \Lambda}\,\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B}\right)dB + \left(-\frac{\partial u}{\partial \pi}\,f - \frac{\partial u}{\partial \Lambda}\,\frac{1}{\sigma} - \frac{\partial u}{\partial \tau}\right)dF \\ & + \left(-\frac{\partial u}{\partial \pi}\,e - \frac{\partial u}{\partial \tau}\,wk\right)dS + \left(-\frac{\partial u}{\partial \pi}\,g - \frac{\partial u}{\partial \Lambda}\,\frac{1}{\sigma} - \frac{\partial u}{\partial \tau}\,wh\right)dT \\ & + \left(-\frac{\partial u}{\partial \tau}\,mv\right)dD.\end{aligned}$$

The necessary condition for utility to be a maximum subject to the condition of the balance sheet identity is that $du = 0$ for all variations which satisfy

$$(24)\quad dG + dL = v\,dD + w\,dS + w\,dT + dF + dB.$$

Taking dB as the dependent variable given by expression (24), it can be eliminated from (23) obtaining

$$(25)\quad du = (\frac{\partial u}{\partial \pi} r + \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} + \frac{\partial u}{\partial \tau} a)\, dG + (\frac{\partial u}{\partial \pi}\alpha + \frac{\partial u}{\partial \tau} b)\, dL$$
$$+ (-\frac{\partial u}{\partial \pi} d - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B})\, (dG + dL - vdD - wdS - wdT - dF)$$
$$+ (-\frac{\partial u}{\partial \pi} f - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau})\, dF + (-\frac{\partial u}{\partial \pi} e - \frac{\partial u}{\partial \tau} wk)\, dS$$
$$+ (-\frac{\partial u}{\partial \pi} g - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} wh)\, dT + (-\frac{\partial u}{\partial \tau} mv)\, dD.$$

This can be written as

$$(26)\quad du = [\frac{\partial u}{\partial \pi}(r-d) + \frac{\partial u}{\partial \tau}(a-1) + \frac{\partial u}{\partial B}]\, dG$$
$$+ [\frac{\partial u}{\partial \pi}(\alpha-d) - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} + \frac{\partial u}{\partial \tau}(b-1) + \frac{\partial u}{\partial B}]\, dL$$
$$+ [\frac{\partial u}{\partial \pi}(d-f) - \frac{\partial u}{\partial B}]\, dF$$
$$+ [\frac{\partial u}{\partial \pi}(wd-e) + \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma}(w) + \frac{\partial u}{\partial \tau}(w-wk) - \frac{\partial u}{\partial B}(w)]\, dS$$
$$+ [\frac{\partial u}{\partial \pi}(wd-g) + \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma}(w-1) + \frac{\partial u}{\partial \tau}(w-wh) - \frac{\partial u}{\partial B}(w)]\, dT$$
$$+ [\frac{\partial u}{\partial \pi}(vd) + \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma}(v) + \frac{\partial u}{\partial \tau}(v-mv) - \frac{\partial u}{\partial B}(v)]\, dD.$$

Since du must be zero for all variations in the independent variables, each quantity in brackets in (26) must equal zero, i.e.,

$$\frac{\partial u}{\partial \pi}(r-d) + \frac{\partial u}{\partial \Lambda}(a-1) + \frac{\partial u}{\partial B} = 0$$

$$\frac{\partial u}{\partial \pi}(\alpha-d) - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} + \frac{\partial u}{\partial \tau}(b-1) + \frac{\partial u}{\partial B} = 0$$

$$\frac{\partial u}{\partial \pi}(d-f) - \frac{\partial u}{\partial B} = 0$$

$$\frac{\partial u}{\partial \pi}(wd-e) + \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma}(w) + \frac{\partial u}{\partial \tau}(w-wk) - \frac{\partial u}{\partial B}(w) = 0$$

$$\frac{\partial u}{\partial \pi}(wd-g) + \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma}(w-1) + \frac{\partial u}{\partial \tau}(w-wh) - \frac{\partial u}{\partial B}(w) = 0$$

$$\frac{\partial u}{\partial \pi}(vd) + \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma}(v) + \frac{\partial u}{\partial \tau}(v-mv) - \frac{\partial u}{\partial B}(v) = 0.$$

These relationships are those which must hold in the completely general case when any change in the banker's portfolio is made. It is the set of first order conditions for the maximization of utility and, as such, is the general equilibrium position implied by the model.

Of interest here is the much more specific aspect of a banker's behavior, namely, his borrowing behavior when faced with desired increases in loans or deposit withdrawals. Alternative restrictions on the means of adjustment available to the banker are imposed to permit the determination of what the banker considers in deciding between adjusting his reserve position by borrowing versus the other means available to him.

A banker in increasing his loans or who is faced with deposit withdrawals may choose to obtain all necessary additional reserves from one source. He can, for example, adjust his position by borrowing, and not look to any other source for additional reserves.

Assume that the banker experiences deposit withdrawals, dD, and chooses to adjust entirely by borrowing, dB. In so doing he equates one minus the reserve requirement times the decrease in deposits with a change in borrowing, i.e., $dB = -vdD$. From (23) and the necessary conditions for utility maximization, a relationship among the variables can be derived by assuming only this source of additional reserves available. If,

for example, a banker adjusted his position entirely by borrowing from the Federal Reserve when faced with deposit withdrawals and in so doing maximized utility, the expressions which necessarily hold are:

$$(27)\quad du = \left(-\frac{\partial u}{\partial \pi} d - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B}\right) dB + \left(-\frac{\partial u}{\partial \tau} mv\right) dD$$

and since $dB = -v\, dD$;

$$(28)\quad du = \left(-\frac{\partial u}{\partial \pi} d - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B} + \frac{\partial u}{\partial \tau} m\right) dB.$$

For utility to be a maximum

$$(29)\quad \frac{\partial u}{\partial \pi} d - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B} + \frac{\partial u}{\partial \tau} c = 0.$$

Similar expressions can be written for the situations in which the banker chooses to adjust his position using each of the other possible sources open to him, namely, $dF = -v\, dD$, $dT = -vdD$, and $dG = vdD$. These are respectively:

$$(30)\quad -\frac{\partial u}{\partial \pi} f - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial \tau} m = 0$$

$$(31)\quad -\frac{\partial u}{\partial \pi} g - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} wh + \frac{\partial u}{\partial \tau} m = 0$$

$$(32)\quad \frac{\partial u}{\partial \pi} r + \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} + \frac{\partial u}{\partial \tau} a - \frac{\partial u}{\partial \tau} m = 0$$

Expressions (30), (31), and (32) are the conditions which hold when $dB = 0$ and the total adjustment is made in one of the other sources available to the banker. If, however, the entire adjustment is made by borrowing, then the banker is behaving as though the conditions of (29) hold true. The imposition of the restriction that bankers can choose only one means of adjustment is critical since no choice is involved. In reality he can choose any combination of available sources.

In relaxing this assumption, alternative restrictions are again imposed on the banker's behavior. In this case the restrictions allow the banker to choose between borrowing and each other means of adjustment. First, consider the banker as being able to adjust to deposit withdrawals by borrowing or buying federal funds. The relationship among the variables as given by the balance sheet identity is $dB + dF = -vdD$. From (23) the relationship that must hold for utility maximization can be determined:

$$(33)\quad du = \left(-\frac{\partial u}{\partial \pi} d - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B}\right) dB + \left(-\frac{\partial u}{\partial \pi} f - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau}\right) dF + \left(-\frac{\partial u}{\partial \tau} mv\right) dD,$$

and since $dB + dF = -vdD$:

$$(34)\quad du = \left(-\frac{\partial u}{\partial \pi} d - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} .. \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B}\right) dB + \left(-\frac{\partial u}{\partial \pi} f - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau}\right) dF + \frac{\partial u}{\partial \tau} m\,(dB + dF),$$

$$(35)\quad du = \left(-\frac{\partial u}{\partial \pi} d - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B} + \frac{\partial u}{\partial \tau} m\right) dB + \left(-\frac{\partial u}{\partial \pi} f - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial \tau} m\right) dF.$$

For utility to be a maximum, du must equal zero for all variations in B and F which implies:

$$(36)\quad -\frac{\partial u}{\partial \pi} d - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B} + \frac{\partial u}{\partial \tau} m = 0$$

$$(37)\quad -\frac{\partial u}{\partial \pi} f - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial \tau} m = 0$$

therefore,

$$(38)\quad -\frac{\partial u}{\partial \pi} d - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B} + \frac{\partial u}{\partial \tau} m = -\frac{\partial u}{\partial \pi} f - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial \tau} m,$$

and

$$(39) \quad \frac{\partial u}{\partial \pi}(f-d) + \frac{\partial u}{\partial B} = 0.$$

Since the level of borrowings and federal funds have exactly the same effect on liquidity and soundness as stated in expressions (8) and (14), they do not enter into a decision when choosing between them. The decision turns only on profitability and reluctance to borrow. The decision between borrowing or buying federal funds in accommodating deposit withdrawals is based on their rate difference and their marginal utilities.

Similar expressions can be derived when the restrictions imposed allow the banker to choose either borrowing and government securities or borrowing and time certificates of deposit as a means of adjustment. The relationships among the variables under these two restrictions as given by the balance sheet identity are $dB - dG = - vdD$ and $dB + dT = - vdD$ respectively. Using $dB - dG = - vdD$, expression (23) can be written as

$$(40) \quad du = \left(-\frac{\partial u}{\partial \pi} r - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} a\right)(-dG) + \left(-\frac{\partial u}{\partial \pi} d - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B}\right) dB + \left(\frac{\partial u}{\partial \tau} m\right)(dB - dG),$$

or;

$$(41) \quad du = \left(-\frac{\partial u}{\partial \pi} r - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} a + \frac{\partial u}{\partial \tau} m\right)(-dG) + \left(-\frac{\partial u}{\partial \pi} d - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B} + \frac{\partial u}{\partial \tau} m\right) dB$$

For utility to be a maximum:

$$(42) \quad - \frac{\partial u}{\partial \pi} r - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} a + \frac{\partial u}{\partial \tau} m = 0, \text{ and}$$

$$(45) \quad - \frac{\partial u}{\partial \pi} d - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B} + \frac{\partial u}{\partial \tau} m = 0.$$

Therefore,

$$(44)\quad -\frac{\partial u}{\partial \pi}d-\frac{\partial u}{\partial \Lambda}\frac{1}{\sigma}-\frac{\partial u}{\partial \tau}+\frac{\partial u}{\partial B}+\frac{\partial u}{\partial \tau}m=-\frac{\partial u}{\partial \pi}r-\frac{\partial u}{\partial \Lambda}\frac{1}{\sigma}-\frac{\partial u}{\partial \tau}a+\frac{\partial u}{\partial \tau}m,$$

and

$$(45)\quad \frac{\partial u}{\partial \pi}(r-d)+\frac{\partial u}{\partial \tau}(a-1)+\frac{\partial u}{\partial B}=0.$$

Again, equal but opposite changes in the level of borrowings and government securities have exactly the same effect on liquidity and the decision between liquidating government securities or borrowing does not depend on liquidity. However, in addition to profitability and reluctance, soundness influences the decision. This is because of the different effect that borrowing versus liquidating government securities has on bank soundness as given in expression (14). A decision to borrow rather than liquidate government securities reduces soundness, and thus depends on their differential effect. Thus, along with the difference in the discount rate and the rate on government securities and the marginal utilities of profits and borrowing, soundness enters as a decision variable.

Using $dB + dT = -vdD$, (23) can be written as

$$(46)\quad du=\left(-\frac{\partial u}{\partial \pi}d-\frac{\partial u}{\partial \Lambda}\frac{1}{\sigma}-\frac{\partial u}{\partial \tau}+\frac{\partial u}{\partial B}\right)dB$$

$$+\left(-\frac{\partial u}{\partial \pi}g-\frac{\partial u}{\partial \Lambda}\frac{1}{\sigma}-\frac{\partial u}{\partial \tau}wh\right)dT+\frac{\partial u}{\partial \tau}m\,(dB+dT),$$

or,

$$(47)\quad du=\left(-\frac{\partial u}{\partial \pi}d-\frac{\partial u}{\partial \Lambda}\frac{1}{\sigma}-\frac{\partial u}{\partial \tau}+\frac{\partial u}{\partial B}+\frac{\partial u}{\partial \tau}m\right)dB$$

$$+\left(-\frac{\partial u}{\partial \pi}g-\frac{\partial u}{\partial \Lambda}\frac{1}{\sigma}-\frac{\partial u}{\partial \tau}wh+\frac{\partial u}{\partial \tau}m\right)dT$$

For utility to be a maximum:

$$(48)\quad -\frac{\partial u}{\partial \pi}\,d - \frac{\partial u}{\partial \Lambda}\,\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B} + \frac{\partial u}{\partial \tau}\,m = 0, \text{ and}$$

$$(49)\quad -\frac{\partial u}{\partial \pi}\,g - \frac{\partial u}{\partial \Lambda}\,\frac{1}{\sigma} - \frac{\partial u}{\partial \tau}\,wh + \frac{\partial u}{\partial \tau}\,m = 0.$$

Therefore,

$$(50)\quad -\frac{\partial u}{\partial \pi}\,d - \frac{\partial u}{\partial \Lambda}\,\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B} + \frac{\partial u}{\partial \tau}\,m = -\frac{\partial u}{\partial \pi}\,g - \frac{\partial u}{\partial \Lambda}\,\frac{1}{\sigma} - \frac{\partial u}{\partial \tau}\,wh + \frac{\partial u}{\partial \tau}\,m,$$

and

$$(51)\quad \frac{\partial u}{\partial \pi}\,(g-d) + \frac{\partial u}{\partial \tau}\,(wh-1) + \frac{\partial u}{\partial B} = 0.$$

The decision between borrowing and selling time certificates of deposit in accommodating deposit withdrawals is based on profitability, soundness, and reluctance. Again, this is because of the different effect that borrowing versus selling time certificates of deposit has on these three arguments in the utility function. Their effect on liquidity is the same and liquidity does not enter the decision.

Taken together, expressions (39), (45), and (51) include all possible means of adjustments assumed available to the banker. According to the model, given a deposit withdrawal, a banker who decides to make the adjustment entirely by borrowing does so while satisfying all three expressions. Given a necessary adjustment, the banker would adjust entirely by borrowing if:

$$(52)\quad \frac{\partial u}{\partial B} > \frac{\partial u}{\partial \pi}\,(d-f), \text{ and}$$

$$(53)\quad \frac{\partial u}{\partial B} > \frac{\partial u}{\partial \pi}\,(d-r) + \frac{\partial u}{\partial \tau}\,(1-a), \text{ and}$$

$$(54)\quad \frac{\partial u}{\partial B} > \frac{\partial u}{\partial \pi}\,(d-g) + \frac{\partial u}{\partial \tau}\,(1-wh).$$

Similar expressions can be written for other means the banker might use to adjust. If federal funds are used for the entire adjustment, then from (39)

$$(55)\quad \frac{\partial u}{\partial \pi}(d-f) > \frac{\partial u}{\partial B}$$

and therefore from (53) and (54)

$$(56)\quad \frac{\partial u}{\partial \pi}(d-f) > \frac{\partial u}{\partial \pi}(d-r) + \frac{\partial u}{\partial \tau}(1-a), \text{ and}$$

$$(57)\quad \frac{\partial u}{\partial \pi}(d-f) > \frac{\partial u}{\partial \pi}(d-g) + \frac{\partial u}{\partial \tau}(1-wh).$$

Since the marginal utilities in this analysis are not assumed constant, care must be taken in writing and interpreting expressions such as (52) through (57). Each term on the left-hand side of the inequalities may decrease as the adjustment is made using the particular means implicit in that term. The difference between the left- and right-hand sides must be great enough to allow the adjustment. They can change only until the two sides are equal or the inequality still holds. For example, if an adjustment is made by borrowing, and after it has been made the inequalities still hold for (52), (53), and (54), then for the same values of the variables a subsequent adjustment would again be made by borrowing.

Since expressions (39), (45), and (51) are sufficiently general to describe a banker's behavior when borrowing, federal funds, time certificates of deposit and government securities are available simultaneously, they are left as the theoretical determinants of borrowing given a decrease in deposits.

The remainder of this section is devoted to the development of the relationship which depicts the banker's adjustments given a change in loans. The derivation is similar to that above in that the same restrictions are imposed on the banker's behavior with respect to the means of adjustment available. The essential difference is that the adjustment must be made to accommodate loans instead of deposit changes. The first of three restrictions imposed is that additional loans must be accommodated either by borrowing or buying federal funds. The relationship among the variables in the balance sheet identity is then $dB + dF = dL$. Expression (23) becomes:

$$(58)\quad du = \left(-\frac{\partial u}{\partial \pi} d - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B}\right) dB + \left(-\frac{\partial u}{\partial \pi} f - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau}\right) dF + \left(\frac{\partial u}{\partial \pi}\alpha + \frac{\partial u}{\partial \tau} b\right)(dB + dF)$$

or,

$$(59)\quad du = \left(-\frac{\partial u}{\partial \pi} d - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B} + \frac{\partial u}{\partial \pi}\alpha + \frac{\partial u}{\partial \tau} b\right) dB + \left(-\frac{\partial u}{\partial \pi} f - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial \pi}\alpha + \frac{\partial u}{\partial \tau} b\right) dF.$$

For utility to be a maximum,

$$(60)\quad -\frac{\partial u}{\partial \pi} d - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B} + \frac{\partial u}{\partial \pi}\alpha + \frac{\partial u}{\partial \tau} b = 0 \text{ and,}$$

$$(61)\quad -\frac{\partial u}{\partial \pi} f - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial \pi}\alpha + \frac{\partial u}{\partial \tau} b = 0.$$

Therefore,

$$(62)\quad -\frac{\partial u}{\partial \pi} d - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B} + \frac{\partial u}{\partial \tau}\alpha + \frac{\partial u}{\partial \tau} b = -\frac{\partial u}{\partial \pi} f - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial \pi}\alpha + \frac{\partial u}{\partial \tau} b, \text{ and}$$

$$(63) \qquad \frac{\partial u}{\partial \pi}(f-d) + \frac{\partial u}{\partial B} = 0.$$

Similarly, under the imposition that additional loans must be met by borrowing or selling government securities the balance sheet identity becomes $dB - dG = dL$. Expression (23) becomes

$$(64) \quad du = \left(-\frac{\partial u}{\partial \pi} d - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B}\right) dB + \left(\frac{\partial u}{\partial \pi} r + \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} + \frac{\partial u}{\partial \tau} a\right) dG$$

$$+ \left(\frac{\partial u}{\partial \pi}\alpha + \frac{\partial u}{\partial \tau} b\right)(dB - dG)$$

or,

$$(65) \quad du = \left(-\frac{\partial u}{\partial \pi} d - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B} + \frac{\partial u}{\partial \pi}\alpha + \frac{\partial u}{\partial \tau} b\right) dB$$

$$+ \left(-\frac{\partial u}{\partial \pi} r - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} a + \frac{\partial u}{\partial \pi}\alpha + \frac{\partial u}{\partial \tau} b\right)(-dG).$$

For utility to be a maximum,

$$(66) \quad -\frac{\partial u}{\partial \pi} d - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B} + \frac{\partial u}{\partial \pi}\alpha + \frac{\partial u}{\partial \tau} b = 0, \text{ and}$$

$$(67) \quad -\frac{\partial u}{\partial \pi} r - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} a + \frac{\partial u}{\partial \pi}\alpha + \frac{\partial u}{\partial \tau} b = 0.$$

Therefore,

$$(68) \quad -\frac{\partial u}{\partial \pi} d - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B} + \frac{\partial u}{\partial \pi}\alpha + \frac{\partial u}{\partial \tau} b =$$

$$-\frac{\partial u}{\partial \pi} r - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} a + \frac{\partial u}{\partial \pi}\alpha + \frac{\partial u}{\partial \tau} b, \text{ and}$$

$$(69) \qquad \frac{\partial u}{\partial \pi}(r-d) + \frac{\partial u}{\partial \tau}(a-1) + \frac{\partial u}{\partial B} = 0.$$

When the two alternatives available for adjustment are borrowing and time certificates of deposit, the relationship for changes in the variables of the balance sheet is $dB + dT = dL$. Expression (23) becomes:

$$(70)\quad du = \left(-\frac{\partial u}{\partial \pi}d - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B}\right) dB + \left(-\frac{\partial u}{\partial \pi}g - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau}wh\right) dT$$

$$+ \left(\frac{\partial u}{\partial \pi}\alpha + \frac{\partial u}{\partial \tau}b\right)(dB - dG)$$

or,

$$(71)\quad du = \left(-\frac{\partial u}{\partial \pi}d - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B} + \frac{\partial u}{\partial \pi}\alpha + \frac{\partial u}{\partial \tau}b\right) dB$$

$$+ \left(-\frac{\partial u}{\partial \pi}g - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau}wh - \frac{\partial u}{\partial \pi}\alpha + \frac{\partial u}{\partial \tau}b\right) dL.$$

For utility to be a maximum,

$$(72)\quad -\frac{\partial u}{\partial \pi}d - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B} + \frac{\partial u}{\partial \pi}\alpha + \frac{\partial u}{\partial \tau}b = 0, \text{ and}$$

$$(73)\quad -\frac{\partial u}{\partial \pi}g - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau}wh + \frac{\partial u}{\partial \pi}\alpha + \frac{\partial u}{\partial \tau}b = 0.$$

Therefore,

$$(74)\quad -\frac{\partial u}{\partial \pi}d - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau} + \frac{\partial u}{\partial B} + \frac{\partial u}{\partial \pi}\alpha + \frac{\partial u}{\partial \tau}b =$$

$$-\frac{\partial u}{\partial \pi}g - \frac{\partial u}{\partial \Lambda}\frac{1}{\sigma} - \frac{\partial u}{\partial \tau}wh + \frac{\partial u}{\partial \pi}\alpha + \frac{\partial u}{\partial \tau}b, \text{ and}$$

$$(75)\quad \frac{\partial u}{\partial \pi}(g-d) + \frac{\partial u}{\partial \tau}(wh-1) + \frac{\partial u}{\partial B} = 0.$$

Expressions (63), (69), and (75) provide the relevant variables a banker considers when making his decision between borrowing and any alternate means of adjustment given an increase in loans. These expressions are identical to those obtained when the need for adjustment was due to deposit changes. Thus, the theory provided here implies that the distinction between loan changes and deposit changes as a cause for the necessary adjustment does not change the relevant variables on which the borrowing decision is made.

Thus far, the theory provides general implications about the variables which determine the desired level of borrowings, B_t^*, in expression (1). The first order conditions for utility maximization derived from the model of the individual bank indicate that the desired level of borrowings is a function of interest rate spreads, the maturity structure of the government securities portfolio and of time certificates of deposit; and the marginal utilities of profits, soundness, and borrowing. In general

$$(76) \quad B_t^* = B^*(r\text{-}d,\ f\text{-}d,\ g\text{-}d,\ a\text{-}l,\ wh\text{-}l,\ \frac{\partial u}{\partial \pi},\ \frac{\partial u}{\partial \tau},\ \frac{\partial u}{\partial B}).$$

The second order conditions for utility maximization are now used to determine the various forms of (76) that are permissible.

To this point, no assumption has been made about the form of the banker's utility function. Exactly what form that function takes which best describes banker's behavior must be determined empirically. There are, however, certain implications which can be drawn from the theory already presented and from the second order conditions for the maximization of utility.

Expressions (39), (42), and (51) or (63), (69), and (75) are the first order conditions for utility maximization given the particular assumptions about available means of adjusting to deposit decreases or loan increases. One obvious implication from these is that all the marginal utilities in the expressions cannot be constant. This is apparent when considering the following example. If in expression (39) it is assumed that $\frac{\partial u}{\partial \pi} = c_1$ and $\frac{\partial u}{\partial B} = c_2$, where c_1 and c_2 are constants, then in equilibrium c_1 (f-d) + c_2 = 0. For this to hold, the only "variable" in the expression, (f-d), must be the constant which equates the expression.

Neither the federal funds rate, f, nor the discount rate, d, can be controlled by the individual banker so that if the expression held, it would be only accidentally when (f-d) happened to equal $-\frac{c_1}{c_2}$.

This conclusion is also derived from the second order conditions for utility maximization. In words, these conditions insure that the solution to the first order conditions maximizes the utility function rather than minimizes it. Their use, however, is somewhat limited. In their general form they will not dictate the exact form the utility function must have. For the purposes here, their implications can be most effectively achieved by stating them in words rather than going through the long and tedious process of deriving them mathematically. They are to be used in selecting that form or those forms of the utility function which seem most logical on a priori grounds without violating the restrictions which insure that utility is maximized.

The assumption usually made is that the marginal utility of each argument in the utility function is decreasing. While this assumption could be used here, it is too restrictive. Again, this can be seen by assuming in expression (39) that the marginal utility of borrowing is decreasing and the marginal utility of profits is a constant, c_1. Then $c_1 (f-d) + \frac{\partial u}{\partial B} = 0$. If the banker has only the two means of adjustment assumed available to him in deriving this expression, namely buying federal funds and borrowing, then he is in equilibrium when this expression holds. Starting from an initial equilibrium position and given the assumption of marginal utility of borrowing, a change in (f-d) will cause a change in borrowings. If (f-d) increases, the marginal utility of borrowing must decrease. For the marginal utility of borrowing to decrease, their level

must increase. The banker will continue to adjust until he is again in equilibrium.

The second order conditions are not violated in the above example if there exists a mix between borrowings and profits such that $\frac{\partial u}{\partial \pi}(f-d) < -\frac{\partial u}{\partial B}$. This is made obvious by the fact that if the marginal utility of profits times the relative profitability of the means of adjustment, $\frac{\partial u}{\partial \pi}(f-d)$, were everywhere greater than the marginal disutility of borrowing, $(-\frac{\partial u}{\partial B})$, then the banker would maximize utility by never borrowing. The marginal additions to utility because of its relative profitability would never be greater than the marginal reductions in utility due to borrowing.

Similar examples can be constructed for the other expressions which comprise the first order conditions. The general conclusions are that (1) some of the marginal utilities must be decreasing while others can be constant and (2) the marginal utilities that are constant must be somewhere less than those that are decreasing multiplied by their respective variables. The second conclusion is assumed for the remainder of this study.

Given these restrictions, there still remains an infinite number of possible forms for the utility function. One possible version is presented in this section and estimated in the next chapter. The other versions estimated can be derived in a similar manner.

First assume that the marginal utility of borrowing is decreasing. The tradition against borrowing or the reluctance to borrow generally attributed to bankers indicates that not only is the marginal utility of

borrowing itself negative, but also that as borrowing increases, this marginal disutility increases. Secondly, assume that the marginal utility of soundness is constant. As defined, soundness is a long-run consideration of the banker. Since of interest here are short-run adjustments, the assumption that soundness has a constant influence on short-run decisions seems very reasonable. Thirdly, assume that the marginal utility of profits is constant over the relevant range. Again, if the banker is primarily concerned with long-run profits and if changes in the relative profitability of available means of adjustment are slight, then constant marginal utility of profits may accurately describe the banker's evaluation of profits.

Using these assumptions and the first order conditions, the desired level of borrowings can be written as an explicit function of the independent variables. If the marginal utility of borrowing is decreasing, it must be that the utility function is twice differentiable with respect to borrowing, i.e., $\frac{\partial u}{\partial B}$ must contain (B) in one form or another. Since this form is unknown it is assumed to be linear, i.e., $\frac{\partial u}{\partial B} = -\theta_1 - \theta_2 B$, where θ_1 and θ_2 are positive constants. The marginal utilities of profits and soundness are assumed constant so that $\frac{\partial u}{\partial \pi} = \theta_3$ and $\frac{\partial u}{\partial \tau} = \theta_4$ where θ_3 and θ_4 are constants.

We now substitute into the first order conditions the forms of the marginal utilities assumed above. From expressions (39), (45), and (51) we get.

$$(77)\quad \theta_3(f-d) + \theta_1 - \theta_2 B = 0$$

$$(78)\quad \theta_3(r-d) + \theta_4(a-l) + \theta_1 - \theta_2 B = 0$$

$$(79)\quad \theta_3(g-d) + \theta_4(wh-l) + \theta_1 - \theta_2 B = 0.$$

These can be written as:

$$(80)\quad B = \frac{\theta_1}{\theta_2} + \frac{\theta_3}{\theta_2}(f-d)$$

$$(81)\quad B = \frac{\theta_1}{\theta_2} + \frac{\theta_3}{\theta_2}(r-d) + \frac{\theta_4}{\theta_2}(a-l)$$

$$(82)\quad B = \frac{\theta_1}{\theta_2} + \frac{\theta_3}{\theta_2}(g-d) + \frac{\theta_4}{\theta_2}(wh-l).$$

Underlying expressions (80), (81), and (82) remain the respective assumptions about available means of adjustment. In reality, the desired levels of borrowing given by each influence the general desired level when all means are simultaneously available. Denoting (B) in expression (80) as B_1^*, (B) in expression (81) as B_2^*, (B) in expression (82) as B_3^*, and the general desired level of borrowings as B_t^*,

$$(83)\quad B_t^* = \theta_5 B_1^* + \theta_6 B_2^* + \theta_7 B_3^*$$

where θ_5, θ_6 and θ_7 are constants and $\theta_5 + \theta_6 + \theta_7 = 1$. Substituting (80), (81), and (82) into (83) results in the final expression for the general, desired level of borrowings.

$$(84)\quad B_t^* = \frac{\theta_5\theta_1}{\theta_2} + \frac{\theta_5\theta_3}{\theta_2}(f-d) + \frac{\theta_6\theta_1}{\theta_2} + \frac{\theta_6\theta_3}{\theta_2}(r-d)$$

$$+ \frac{\theta_6\theta_4}{\theta_2}(a-l) + \frac{\theta_7\theta_1}{\theta_2} + \frac{\theta_7\theta_3}{\theta_2}(g-d) + \frac{\theta_7\theta_4}{\theta_2}(wh-l).$$

The θ_i's are constants and expression (84) can be more simply written as:

$$(85)\quad B_t^* = \theta_1' + \theta_2'(f-d) + \theta_3'(r-d) + \theta_4'(g-d) + \theta_5'(a-l) + \theta_6'(wh-l).$$

Expression (85) is one possible form that the function for the desired level of borrowings can take. The one presented is linear in the rate

spreads, (f-d), (r-d), and (g-d), and maturity distribution of government securities (a-1) and time certificates of deposit (wh-1).

The Effect of Federal Reserve Surveillance

The derivation of the first order conditions in the previous section centered on the determinants for borrowed funds exclusively from the banker's point of view. The banker's attitude toward borrowing may be influenced by Federal Reserve action. The infinitely elastic supply curve implied by the fact that all borrowings are made at the discount rate, and the lack of evidence that the Federal Reserve has ever refused to make a loan once proper application has been made, leads to the conclusion that Federal Reserve surveillance must affect the demand for borrowings if it is at all effective in controlling the use of the discount window.

Federal Reserve officials emphasize that borrowing is a privilege of Federal Reserve membership and not a right. This privilege is extended to those member banks that make proper application and conform to certain regulations as defined by the Federal Reserve.

> Each Federal Reserve Bank is required by law to keep itself informed of the general character and amount of the loans and investments of its member banks with a view to ascertaining whether undue use is being made of bank credit for the speculative carrying of or trading in securities, real estate, or commodities for any other purpose inconsistent with the maintenance of sound credit conditions; and, in determining whether to grant or refuse advance or discounts, the Federal Reserve Bank is required to give consideration to such information. Each Federal Reserve Bank may require such information from its member banks as it may deem necessary in order to determine whether such undue use of bank credit is being made and whether the granting of any requested credit accommodation would be consistent with the general principle application to extension of credit. . . (37, p. 8).

Thus, Regulation A requires that lending decisions be based on the borrowing bank's records. The Regulation also states that ". . . continuous use of Federal Reserve credit by a member bank over a considerable period of time is not regarded as appropriate (37, p. 1). For surveillance to affect the demand for borrowings it must do so through decreasing the quantity demanded by changing the effective rate paid on borrowings (due to costs of preparing and submitting records to the discount officer) or shifting the demand curve by increasing the reluctance on the part of the banker to borrow.

The several factors which are mentioned in the quotation from Regulation A above and which "each Federal Reserve Bank is required by law to keep itself informed of (37, p. 8)," indicate that the general element that Federal Reserve officials must consider in their appraisal of a loan request is the purpose of borrowing. It seems that the intensity of Federal Reserve surveillance depends on how Federal Reserve officials view the individual bank's purpose for borrowing. A sudden large withdrawal of deposits or a crop failure in an agricultural area would likely be an appropriate reason for borrowing under the regulation. Also, continued indebtedness to the Federal Reserve "is not regarded as appropriate (37, p. 1)" even though the initial reason for borrowing is legitimate under the regulation. Once in debt, the banker must take action to get out of debt. Regulation A thus implies that the initial reason for borrowing may become less and less legitimate as it becomes more remote in time.

From the above discussion, three elements emerge as possible results of surveillance: the effective cost of borrowing may not be the

stated discount rate; the demand curve for borrowings may shift because of increasing surveillance as the length of time any particular banker remains in debt; a regard for an overall policy objective on the part of Reserve officials may cause their surveillance to increase irregardless of the history of borrowing of any particular bank.

The Effective Cost of Borrowing

In determining the legitimacy of the reason for borrowing in reserve periods subsequent to the one in which the initial request was made, Reserve officials may require such information from the borrowing bank that will permit them to determine whether undue use is being made of Reserve Bank credit. Any cost of preparing and submitting this information causes the effective discount rate to increase. The request of information depends on the appropriateness of the initial reason for borrowing under the regulation and the length of time in debt.

This actual increase in the cost of borrowing is extremely difficult if not impossible to measure. The effect of any such increase will be a lesser quantity or less frequent borrowing by the individual banker. Thus, rather than try to estimate the additional costs of borrowing caused by surveillance, the indirect route of using a variable which measures the impact of these additional costs directly on the quantity borrowed is used. Since borrowings in previous periods give rise to surveillance in the current period, Federal Reserve surveillance which causes the effective rate to be above the stated rate is defined to be a function of past borrowings. Thus, $FS_1 = FS'(B_{t-1}, B_{t-2},\ldots)$, where surveillance that increases

the effective cost of borrowing, FS_1, is a function, FS', of past borrowings, B_{t-1}, B_{t-2}.

Banker's Reluctance

In addition to costs which may arise from Federal Reserve surveillance, bankers themselves are traditionally reluctant to borrow. As a particular banker remains in debt, surveillance may cause this reluctance to increase regardless of cost. The length of time in debt or the frequency of being in debt may cause surveillance to change and to the extent that bankers respond to this, their behavior at the discount window will change. A statistic that discount officials keep on borrowing banks is the number of reserve periods that any particular bank has been in debt out of the last 13 weeks. Thus, the response by bankers in their reluctance to borrow because of a change in surveillance which is brought on by the relative frequency of borrowing is denoted by FS_2. And, $FS_2 = FS^2(N)$. That is, this type of Federal Reserve surveillance is a function, FS^2, of the number of weeks the bank has been in debt, N, in the last 13.

General Policy Objectives

For monetary policy to be effective in changing the level of bank reserves, discounting must be carried out in recognition of the fact that borrowing could offset any desired decrease in reserves. Borrowing increases during periods of monetary restraint and a greater use of open market operations is necessary to achieve a particular reduction in reserves. If administrative action by discounting officials is carried out in recognition of an overall policy objective then an increasing aggregate level of borrowing may also cause surveillance to intensify. The impact

of this on borrowing at the individual bank level is the same as when surveillance is brought about by a particular bank's borrowing history. The reason that surveillance intensifies is different and thus an additional variable is used to denote variable changes in surveillance because of general policy objectives. $FS_3 = FS^3(I)$. That is, this type of Federal Reserve surveillance is a function, FS^3, of the aggregate level of borrowings, I.

The Final Determinants of Borrowing

In deriving the determinants of the desired level of borrowings four assumptions were made: The banker has exact knowledge of his reserve needs; these reserve needs are a result of changes in two particular items of his balance sheet, namely, loans and deposits; the changes in loans and deposits are infinitesimally small; and the banker has four ways to adjust to his needs. The one assumption least likely to be satisfied is that the change in loans and deposits are infinitesimally small.

At the end of the reserve settlement period bankers have information on deposit and loan changes and know whether they are running a deficit or surplus in their reserve balance. The cause of fluctuations in their reserve balances is closely tied to deposit changes since a check drawn on a particular bank is cleared by debiting the reserve balance of the paying bank. Also, when a banker makes a loan, he creates a deposit for the person to whom the loan is granted and must have sufficient reserves to back this deposit. The four means of adjustment assumed available to the banker (with the exception of time certificates of deposit) are accessible on the same day in which the need for reserves is present and thus are the most reasonable choices for uses in reserve period-to-reserve period adjustments.

To account for the possibility of wide changes in deposits and loans between reserve periods or changes that would create additional reserves rather than a need for reserves, the actual changes in deposits and loans are included as determinants of the desired level of borrowings. The desired level is thus a function of the variables in (79) and the changes in deposits and loans that were assumed in deriving the expression.

Deposits and loans were selected as the variables in determining the desired level of borrowing for the obvious reason that changes in them are linked to changes in the reserve needs of the bank. Thus far, it has been accepted that decreases in deposits and increases in loans create a need for reserves. It is important here to note what the linkage is between deposits, loans, and reserves and hence the best way to measure their changes empirically.

The distinction is first made between primary deposit changes and secondary deposit changes. A primary deposit change for the individual banker arises from a net deposit outflow or inflow between his bank and the rest of the banking system. For example, a $100 check written on bank A to a person with an account at bank B is a primary deposit outflow for bank A and inflow for bank B. The check is cleared through the Federal Reserve System by debiting bank A's reserve account and crediting bank B's. If bank A had no excess reserves it would have to obtain $100 (less the amount of reserves backing the deposit that is now gone) for its reserve account. Thus, the entire primary deposit outflow (less the reserves that backed the deposit) is the reserve deficiency.

A secondary deposit change is one created by the banker himself. He does so in making a loan. In granting a loan of, say $100, the banker

creates a deposit in the customer's account for $100. Since reserves must be held against deposits, the banker must have sufficient reserves to cover the newly created deposit. If the reserve requirement is 16 1/2 percent of deposits, then for the $100 deposit, reserves of $16.50 must be held. If the bank had no excess reserves prior to the granting of the loan, the reserve requirement times the amount of the loan is the deficiency created.

The impact of primary versus secondary deposit changes on the reserve position of the bank is obviously quite different. In primary deposit outflows the reserve loss is one minus the reserve requirement or currently .835 times the deposit outflow. For secondary increases in deposits the reserve need created is the reserve requirement or .165 times the deposit.

Primary deposit change cannot be distinguished from secondary deposit changes or loans by looking at a deposit series taken from a bank's balance sheets over time. It is possible for a reserve need to be created when no change in deposits appears on the balance sheet between two reserve periods. For example, a banker may experience a primary deposit loss of $100 between t and t+1 and over the same interval grant a loan and thereby create a deposit of $100. Deposits have not changed but the banker has experienced a definite deterioration in his reserve position. The primary deposit loss results in an $83.50 reserve deficiency and the loan or secondary deposit increase results in a need for $16.50 in reserves.

Thus, it seems that the proper measure for the impact of changes in primary deposits on the reserve position of the bank from t to t+1 is

one minus the reserve requirement times the change in total reserves, $v\Delta TR$; and the proper measure for changes in loans is the reserve requirement on deposits times the change in loans, $(1-v)\Delta L$. These two variables are included in (76) as additional determinants of the desired level of borrowings.

$$(86)\quad B^* = B^*[r-d,\ f-d,\ g-d,\ a-1,\ wh-1,\ \frac{\partial u}{\partial \pi},\ \frac{\partial u}{\partial \tau},\ \frac{\partial u}{\partial B},\ v\Delta TR,\ (1-v)\Delta L].$$

Expression (86) is the final, general expression for the desired level of borrowings. All that remains is to substitute (86) and the surveillance variables into (1) to obtain

$$(87)\quad \Delta B = \delta\{B^*[r-d,\ f-d,\ g-d,\ a-1,\ wh-1,\ \frac{\partial u}{\partial \pi},\ \frac{\partial u}{\partial \tau},\ \frac{\partial u}{\partial B},\ v\Delta TR,\ (1-v)\Delta L] - B_{t-1},\ FS_1,\ FS_2,\ FS_3\}.$$

The change in borrowings between t and t-1 is determined by the difference between the desired level of borrowings (as a function, B^*, of its determinants) and the actual level and by Federal Reserve surveillance.

The functions δ, FS^1, FS^2, and FS^3 are now assumed to be linear and the two variables $v\Delta TR$ and $(1-v)\Delta L$ assumed to enter B_t^* linearly. If (85) is used as the form for the remaining variables that determine B_t^*, then (87) can be written explicitly as

$$(88)\quad \Delta B = \delta_0 + \delta_1(f-d) + \delta_2(r-d) + \delta_3(g-d) + \delta_4(a-1) + \delta_5(wh-1) + \delta_6(v\Delta TR) + \delta_7[(1-v)\ L] + \delta_8(B_{t-1}) + \delta_9(B_{t-2}) + \delta_{10}(I) + \delta_{11}(N).$$

This expression can be further simplified by noting: $\Delta B = B_t - B_{t-1}$; w, v = constants; TR = unborrowed reserves, U, plus borrowed reserves, B, and hence $\Delta TR = \Delta U + \Delta B$.

Substituting these into (88)

$$(89)\quad B_t - B_{t-1} = \delta_0 + \delta_1(f-d) + \delta_2(r-d) + \delta_3(g-d) + \delta_4(a) - \delta_4 + \delta_5 w(L) - \delta_5 + \delta_6 v(\Delta U + B_t - B_{t-1}) + \delta_7(1-v)(\Delta L) + \delta_8(B_{t-1}) + \delta_9(B_{t-2}) + \delta_{10}(I) + \delta_{11}(N).$$

By collecting like terms and redefining the constants, (89) becomes

$$(90)\quad B_t = \omega_0 + \omega_1(f-d) + \omega_2(r-d) + \omega_3(g-d) + \omega_4(a) + \omega_5(h) + \omega_6(\Delta U) + \omega_7(\Delta L) + \omega_8(B_{t-1}) + \omega_9(B_{t-2}) + \omega_{10}(I) + \omega_{11}(N).$$

This is the final theoretical expression in explanation of member bank borrowing. In words, borrowing at time t is a function of interest rate spreads (f-d), (r-d), and (g-d); the maturity structure of the government securities portfolio and of time certificates of deposit outstanding, a and h; the change in unborrowed reserves ΔU; the change in loans ΔL; the level of borrowings in previous periods B_{t-1} and B_{t-2}; and two proxies for Federal Reserve surveillance. Various forms of equations containing all or some of the variables of (90) are estimated and presented in the Appendix.

The Expected Signs for Coefficients

Proposition I

In developing expression (90), the marginal utility of profits was assumed constant and greater than zero. This implies that as the profitability of a particular adjustment grows the greater is its use. The process of adjusting involves either sales of earning assets or purchases of additional liabilities. These are both costs to the banker. The sale

of government securities reduces the quantity of earning assets held by the bank and is thus an opportunity cost. Interest must be paid on borrowings, federal funds, and time certificates of deposit which are direct costs. Profitability is still a meaningful concept in this context. If a banker prefers more profits to less then a necessary adjustment in his reserve position using one of these instruments would be made in the least costly way.

Given borrowing as the dependent variable in expression (90) and the rate spreads (f-d), (r-d), and (g-d) as the costliness of borrowing relative to buying federal funds, selling government securities, and selling time certificates of deposit, the assumption of a constant and positive marginal utility of profits implies that borrowings vary directly with the rate spreads. For example, the higher the federal funds rate relative to the effective discount rate the more likely a banker is to choose borrowing rather than buying federal funds in adjusting. For borrowings to be positively related to the rate spreads it must be that ω_1, ω_2, and ω_3 are greater than zero.

Proposition II

The marginal utility of soundness was also assumed constant and positive in developing expression (90). This implies that ω_4 is less than zero and ω_5 is greater than zero, i.e., borrowing is negatively related to (a) and positively related to (h).

(a) is the percentage of the total quantity of government securities held by the bank that is obtainable by selling them under conditions of distress. Since the behavior of the banker on a reserve period to

reserve period basis is of interest here, conditions of distress include the mere need of reserves during a reserve period. From reserve period-to-reserve period (a) may change. The direction and magnitude of the change depends upon changes in interest rates on the various maturities of government securities held and upon the particular maturity distribution of the banker's government securities portfolio. For example, if interest rates increase then market prices of securities decrease and the longer the maturity of a security the greater the price decrease.

As (a) changes because of interest rate changes or the maturity distribution of the banker's government securities portfolio, B_t is expected to change in the opposite direction. Bankers would rather adjust by borrowing than selling governments when their price is low. A negative sign is thus expected for ω_4.

(h) is the percentage of outstanding time certificates of deposit that mature during the reserve period in which the borrowing decision is made. The higher this percentage the greater the need for reserves. Time certificates of deposit are themselves instruments that can be used to adjust and that quantity maturing could be offset by selling new issues. As the quantity maturing increases selling must also increase. If sales do not keep pace with those maturing then borrowing may be used to obtain the necessary reserves. For borrowing to respond positively to changes in (h), ω_5 must be greater than zero.

Proposition III

Changes in unborrowed reserves are expected to be negatively related to B_t. A negative ΔU indicates an outflow of reserves between two reserve

periods and thus a need for reserves. A positive ΔU indicates an inflow of reserves. A greater amount of borrowings is expected to correspond to greater reserve outflows and thus a negative sign is expected for ω_6.

Proposition IV

Borrowing is expected to be positively related to changes in loans. Loans are made by creating deposits and reserves must be held against deposits. When loans increase, a need for reserves is created and thus a positive sign is expected for ω_7.

Proposition V

Borrowing at time t is expected to be positively related to past borrowings. This is because of what might be called the cost of changing. The banker may be hard pressed to eliminate a reserve deficiency that existed in past reserve periods and that was financed by borrowing. In short, it is costly to make instantaneous adjustments in a portfolio. While it is expected that the relationship will be positive it is also expected that the coefficients on past borrowings will be less than one and decrease as the length of time increases. That is, B_t is expected to be positively related to both B_{t-1} and B_{t-2} and also that the coefficient of B_{t-1} be greater than that of B_{t-2}. Thus, it is expected that $1 > \omega_8 > \omega_9 > 0$.

Proposition VI

As surveillance increases, borrowing is expected to decrease. Thus, ω_{10} and ω_{11} are expected to be less than zero.

EMPIRICAL RESULTS

The Sample

The variables needed to estimate the various forms of the borrowing equation are of two types: variables pertaining to each bank individually and variables pertaining to all banks collectively. The individual bank data are from weekly reporting banks in the Seventh Federal Reserve District. These data were supplied by the Federal Reserve Bank of Chicago from weekly call reports which give the condition of the reporting banks at the close of business on Wednesday. Thirty-eight of the 55 banks currently making weekly reports are used in this study. On June 20, 1966, banks asked to make weekly reports were all banks in the Seventh District with deposits of $100 million or more as of December 30, 1965. Some of the banks making weekly reports at that time did not meet this criterion. Since a constant sample of banks for the entire time period is necessary for time series analysis at the individual bank level, only those banks that were weekly reporters before June 1966 and remained after the revision are used in this study.

The Data

The variables pertaining to each bank individually are from the weekly reports of the 38 banks mentioned above. For these banks, time series of total loans, demand deposits, Treasury securities by maturity classification and total reserves are obtained. These are single day

figures as reported at the close of business on 207 Wednesdays from January 1963 through December 1966. Single day figures are used, despite limitations arising from possible wide daily fluctuations, because of their availability.

Borrowings, the relative frequency of borrowing and aggregate borrowings for the Seventh Federal Reserve District are from the data file of the research library at the Federal Reserve Bank of Chicago. Borrowings for individual banks and aggregate borrowings are available as reserve period averages of daily borrowings and are used rather than single day figures because of several advantages. First, reserves borrowed on any day during the reserve period affect the reserve position for the entire period. That is, if a banker borrows on the first day of the reserve period, it has the same effect on his reserve position for the entire period as borrowing on the last day. Because of this, bankers might be expected to do all their borrowing on the final day of the period since on the final day they would have complete knowledge of their needs. The borrowing data do not substantiate this. The final day of the reserve settlement period has heaviest borrowings in the Seventh District approximately 60 percent of the time. No other day of the reserve period can be singled out as having a substantial part of the borrowings. Since bankers do borrow on days other than Wednesdays, they may not show indebtedness to the Federal Reserve System on the Wednesday call reports and yet have acquired part of their reserves for the reserve period at the discount window. Also, the interest rate variables are weekly averages of daily figures so that using averages of daily borrowings makes the two sets of data more compatible.

The two remaining variables that come from the library data file are the relative frequency of borrowing, N, and the aggregate level of borrowings for the Seventh District, I. N varies from bank to bank, depending on the borrowing history of each particular bank. I applies to all banks collectively.

Other than I, the variables which apply to all banks are interest rates. These are the federal funds rate as reported by the Market Statistics Department of the Federal Reserve Bank of New York; the weekly average of daily market yields on 3-month U. S. Government bills, 3-5 year issues and long-term bonds taken from Banking and Monetary Statistics; the secondary market rate on 3-month time certificates of deposit taken from Solomon Brothers and Hutzler's Bond Market Roundup; and the discount rate for the Seventh Federal Reserve District as reported in various issues of the Federal Reserve Bulletin. Dollar variables are measured in thousands and interest rate variables in percent.

Misspecifications

The estimated equations are misspecified in two ways. First, (h), the percentage paydown of negotiable time certificates of deposit is not included in any of the equations. Data on their maturity structure are not available on a weekly basis and monthly data are available for only the last three months covered in the study. Because of the small number of observations and the necessity of using some arbitrary method of converting the monthly data to weekly, (h) is excluded from the equations. Also, time certificates of deposit are a type of deposit and a net paydown in them is a primary deposit loss. Thus, while the impact of changes in this particular variable is not identified, it is included in ΔU.

The second misspecification concerns the variable (a). The call reports have government securities broken into three maturity classifications: those maturing within one year, one to five years, and after five years. To get a measure of the value of the government securities portfolio, it is assumed that all securities with zero to one, one to five, and after five years maturity have three months, three years, and seven years to maturity respectively. A simplified present value formula is then applied so that

$$a = \frac{1}{(1+r)^{\frac{1}{4}}} \frac{G_1}{G} + \frac{1}{(1+r_3)^3} \frac{G_3}{G} + \frac{1}{(1+r_7)^7} \frac{G_7}{G}.$$

G_1, G_3, and G_7 are the quantities of government securities maturing in three months, three years, and seven years and $G_1 + G_3 + G_7 = G$ where G is the total quantity of governments held. r, r_3, and r_7 are interest rates for Treasury bills, intermediate-term government securities and long-term government bonds. Thus, (a) is the weighted average of three present value coefficients.

The Equations

Ten equations are estimated for each of 36 banks by ordinary least squares. Two banks in the sample did not borrow during the four years covered and hence, no estimates of the coefficients for these banks are obtained.

The first three equations are the three that Goldfeld and Kane (9, p. 511) estimated for the New York class of banks. As such, they include borrowings in previous period, changes in unborrowed reserves both current and one period lagged and three forms of the Treasury bill rate

minus the discount rate, r-d, $(r-d)^2$, and $(r-d)^3$. With the exception of $(r-d)^3$, these variables appear again in expressions (4) through (10) along with the other variables implied by the theory of the previous chapter.

The purpose of estimating ten equations for each bank is to determine which of the variables implied by the theory are most influential in bankers' borrowing decisions. This is done by including various forms of the variables in different equations and examining the standard errors or t statistics of each estimated coefficient.

The Estimated Coefficients

Tables 1 and 2 are summary tables which give the number of times in each equation a particular variable is significantly positive or negative respectively. Also included in these two tables are the number of times each variable is positive or negative without regard to significance. For example, the entry corresponding to B-1 and equation (1) in the first table is 32. This indicates that for the 36 banks, B-1 is significantly positive at the .10 level 32 times when estimated in equation (1). The number in parentheses indicates that B-1 is positive 33 times without regard to significance.

Tables 3 through 38 present the coefficients for each equation and bank. The banks are numbered according to the number of weeks they were in debt during the 207 weeks covered. Thus, bank 1 in Table 1 had 102 weeks of indebtedness and bank 36 in Table 38 was in debt only two weeks.

One of the first noticeable differences in the estimated coefficients among banks for each equation is the difference in their absolute sizes. For example, the coefficient of r-d in equation (1) and bank 1 is 2470.2. For bank 2 this coefficient is 582.06. The major source of such

differences is simply the difference in the sizes of banks in the sample. None of the data are adjusted for bank size and this is reflected in some of the estimated coefficients.

Of greater interest in the context of this study are the signs and significance of the variables in each equation. The five propositions concerning the signs of particular coefficients that were presented in the preceding chapter are now examined to determine whether the estimated coefficients conform to the theoretical expectations.

Proposition I

The estimated coefficients for the cost variables r-d, f-d, g-d, $(r-d)^2$, $(f-d)^2$, $(g-d)^2$, and $(r-d)^3$ vary in sign from equation to equation and bank to bank. As shown in Table 1, the coefficient for r-d is significantly positive less than one-third of the time in every equation. In equations (1), (2), and (3), r-d is positive 25, 22, and 27 times respectively but in each case significantly positive nine times. In the remaining seven equations the number of times r-d appears positive ranges from 19 in equation (5) to 13 in equation (8) and the number of times it is significantly positive ranges from five in equation (5) to one in equations (7) and (9). When r-d is negative it is significant only once in equations (1), (2), and (3). It is significantly negative nine times in equations (6), (8), and (9).

f-d is included in equations (4) through (10). Positive values for its coefficients range from 22 in equation (6) and (7) to 28 in equation (5). And, the number of times it is significantly positive ranges from five in equations (6) and (7) to eight in equation (4). When f-d is

negative it is significantly negative a maximum of four times and this is in equation (8).

g-d is included in equations (6) through (10). The number of times it has a positive coefficient ranges from 20 in equation (10) to 25 in equation (6). It is significantly positive a maximum of nine times in equation (6). Negative coefficients for g-d range from 11 in equation (6) to 16 in equation (10). It is significantly negative only twice in equations (6), (7), (8), and (10) and once in equation (13).

While no specific predictions for the signs of $(r-d)^2$, $(f-d)^2$, $(g-d)^2$, and $(r-d)^3$ were made, their signs are of interest because of possible nonlinear borrowing responses by bankers to changes in its profitability. For example, if bankers respond nonlinearly to changes in the difference between the Treasury bill rate and the discount rate then the higher order terms in r-d should be significantly different from zero. The change in borrowing given a change in r-d and holding all other variables constant is given by the partial derivative of the particular equation in question. For equation (3) this would be: $\frac{\partial B}{\partial (r-d)} = \Omega_1 + \Omega_2(r-d) + 2\Omega_3(r-d)^2$; where Ω_1, Ω_2, and Ω_3 are the estimated coefficients for $(r-d)$, $(r-d)^2$, and $(r-d)^3$ respectively. Assuming Ω_1 positive and Ω_2 and Ω_3 negative, there is some value of r-d at which borrowing will respond negatively to an increase in r-d. At what r-d this will happen depends on the relative sizes of Ω_1, Ω_2, and Ω_3. This is the method that Goldfeld and Kane (9, p. 513) use to test Polakoff's statement that at "still greater spreads, the disutility of borrowing relative to the utility of profit will eventually become so great that member banks will no longer borrow and may even go so far as

to repay part of their outstanding indebtedness to the central bank (27, p. 4)."

The evidence from the equations estimated in this study is that, in general, the coefficients of the second order cost variables are not significantly different from zero. $(r-d)^2$ has a significantly positive coefficient five times in equation (3) and one, three, and two times in equations (5), (7), and (10) respectively. It is significantly negative five times in equation (5) and one, two, and three times in equations (3), (7), and (10). $(f-d)^2$ is significantly positive four, two, and two times in equations (5), (7), and (10) and significantly negative, one, two, and three times in equations (5), (7), and (10). $(g-d)^2$ is significantly positive once in each of the equations in which it is included and significantly negative one and three times. $(r-d)^3$ has one significantly positive coefficient and eight significantly negative coefficients in equation (3).

It is of interest to note that the equations in which r-d is significantly positive the greatest number of times, nine, and significantly negative the least, one, are the three equations of Goldfeld and Kane. Two of the equations have as their only cost variable r-d and the third r-d, $(r-d)^2$ and $(r-d)^3$. When the additional cost variables f-d and g-d are put in the equation, r-d is significantly positive fewer times in each equation and significantly negative more times. Also, in each equation in which both r-d and f-d appear, f-d has both a larger number of positive coefficients and significantly positive coefficients than r-d. And, in each equation in which both r-d and f-d appear, f-d has fewer negative coefficients and fewer significant negative coefficients than r-d. The same is true for g-d when r-d, f-d, and g-d are included.

Thus, in the equations which include all three cost variables, f-d and g-d conform more closely to the expected results than does r-d. These results indicate that omitting cost variables other than r-d as determinants of borrowing results in a misspecification of the equation.

Proposition II

The variable (a) was expected to be negatively related to borrowing. It is included in equations (8), (9), and (10). It is significantly positive two, three, and one times and negative six, two, and three times in equations (8), (9), and (10) respectively. Without regard to significance the number of positive and negative coeffficents are about evenly divided.

The rarity of its significance indicates that, in general, bankers are not influenced in their borrowing decisions by the prices of government securities in the open market. This is to say that capital gains and losses on government securities are not particularly important as determinants of borrowings. If capital gains and losses were important, then as the prices of governments fell the banker would not obtain funds by selling these securities. He would look to other sources and one possible source is borrowing.

This is somewhat limited evidence contrary to what is called the "locked-in (19)" effect, i.e., bankers' reluctance to sell securities when their prices are below the prices at which they were purchased. If only borrowing and selling government securities were available as sources to bankers, the evidence would be more conclusive. For example, if a banker in need of reserves could chose only to sell government securities or

borrow and the prices of government securities happened to be below their purchased price, he would be "locked-in," and would obtain the needed reserves by borrowing. In this case, a nonsignificant coefficient for (a) would indicate that this type of behavior was not evident.

Bankers have more than two sources. Thus, a banker in need of reserves and faced with a capital loss on his government securities may not borrow and still be "locked-in." He could chose to buy federal funds or sell time certificates of deposit even though the federal funds rate and time certificate of deposit rate were above the Treasury bill rate. However, to the extent that a relationship between borrowing and the price of government securities is a test of the reluctance to sell securities at a capital loss, the evidence here indicates that the "locked-in" effect is not an important determinant of borrowing.

Proposition III

— Changes in unborrowed reserves were expected to be negatively related to borrowing. Two forms of unborrowed reserves, current and one period lagged, are included in all ten equations and unborrowed reserves two periods lagged are included in equations (5) through (10). With only three exceptions, all forms of unborrowed reserves are never significantly positive and in only one equation is their sign positive four times.

ΔU is significantly negative at least 25 times in each of the ten equations and ΔU-1 is significantly negative at least 22 times in each equation. ΔU-2 is significantly negative at least 17 times in each of the six equations in which it is included.

Along with being significant, these variables are quite stable from equation to equation for each bank. All coefficients are between zero and minus one and for 22 of the banks, in virtually each equation, $\Omega_1' < \Omega_2' < \Omega_3'$ where Ω_1', Ω_2', and Ω_3' are the coefficients for ΔU, $\Delta U\text{-}1$, and $\Delta U\text{-}2$. For example, bank 1 in Table 1 has -.196 and -.107 as coefficients for ΔU and $\Delta U\text{-}1$ in equation (1). In equation (10) the coefficients for these two variables are -.205 and -.176 and for $\Delta U\text{-}2$, -.129. Judging by the number of coefficients which are significant and their pattern within each bank for each equation, changes in unborrowed reserves are quite influential as determinants of borrowing.

Proposition IV

Borrowings were expected to be positively related to changes in loans. The evidence here indicates just the opposite. The coefficient for changes in loans is positive only once in equations (4), (5), (8), (9), and (10), and none in equations (6) and (7). On the other hand, it is significantly negative eight times in equation (9), six times in equations (4), (5), (6), (7), and (10), and five times in equation (8). Judging by sign alone, it is negative in each equation at least 22 times. Thus, while increases in loans create a need for reserves just as decreases in deposits, the results indicate that bankers are inclined to obtain reserves for loans from sources other than borrowing. And, since a negative relationship is more prevalent than a positive one bankers must tend to decrease borrowings as they increase loans.

Proposition V

Current borrowings were expected to be positively related to past borrowings. As indicated by the number of significant positive coefficients for past borrowings, the empirical results are quite consistent with the theory. This is especially true for borrowings lagged one week. B-1 has a positive coefficient at least 32 times in each of the ten equations and at least 31 of these are significant. The coefficient is negative a maximum of only four times and this is in equation (10). It is significantly negative only once.

For B-2 the number of significant positive coefficients for each equation ranges from nine in equation (10) to 13 in equations (2), (4), and (6). The number of significantly negative coefficients ranges from nine in equations (1), (3), and (6) to 13 in equation (10). For B-3 at least 12 are significantly positive and only two are significantly negative in each of the four equations in which it appears. The fewer number of significant coefficients for B-2 and B-3 reflects the lesser degree of importance of events as they become more remote in time. Also, as Goldfeld and Kane suggest, surveillance on the part of Federal Reserve officials may cause past borrowings to be negatively related to present borrowings (9, p. 506). This is a result of "surveillance induced transactions costs" or possibly increased reluctance caused by surveillance.

Even so, the negative and significant coefficients for B-2 are somewhat surprising. This implies that a bank that has been in debt only two reserve periods prior to the current one is so cognizant of Federal Reserve surveillance or potential surveillance that it has a negative effect on his current borrowings.

Proposition VI

Borrowing was expected to be negatively related to the surveillance variables I and N. Two forms of these variables are included in equations (8), (9), and (10). Equation (8) has the aggregate level of borrowings I, and the number of reserve periods in the last 13 in debt, N, each lagged one reserve period. Equation (9) includes each lagged two periods and (10) includes each lagged both one and two periods. With the exception of N-1 and N-2 in equation (10), the four variables are significantly positive or negative less than eight times in any of the three equations in which they are included. N-1 is significantly positive 12 times and N-2 significantly negative 12 times in equation (10).

CONCLUSIONS

Cost Variables

As indicated by the discussion in the previous chapter, the various cost variables have quite diverse effects on borrowing, not only among banks, but also for different equations for the same banks. Most of the variation in signs within each bank is among nonsignificant coefficients. For example, bank 1 in Table 3 has no significant cost coefficients. The signs on r-d and f-d from equation to equation are both negative and positive. For bank 10, Table 12, the coefficients for r-d are significantly negative for equations (6), (7), (8), and (9) and significantly positive only in equation (10). For bank 16 in Table 18, r-d is both positive and negative and there are none significantly negative.

Thus, judging by significant coefficients within each bank the variations in signs are much less frequent and the cost variables more consistent in their determination of borrowings for each banker. What still remains is that the consistent estimates for each banker are not the same among all bankers. For example, the coefficients of r-d for equations (1), (2), and (3) for bank 5 in Table 7 are each negative and for bank 7 in Table 9 positive. For banks 5 and 16, the coefficients of r-d are significantly negative and positive respectively. Thus, while some degree of consistency is found for the coefficient of the cost variables within banks, no discernible pattern among banks is evident.

This is in contradiction with what Goldfeld and Kane, (9, p. 511) find when estimating their equations using aggregate data. Two possible explanations for this seem apparent. First, is simply that bankers vary in their response to the rate spreads because of their own individual utility functions but a sufficient number of bankers behave similarly and these dominate aggregate borrowing. Thus, in using aggregate data, the total response in borrowing to changes in rate spreads is positive while individual bankers deviate.

The second reason is closely akin to the first. The evidence of the previous chapter is that interest rate differentials are not particularly influential as determinants of borrowing. It will be recalled that less than one-third of all cost coefficients are significantly negative or positive in each equation and for all banks.

Some bankers may borrow without much regard for small positive or negative spreads. For these bankers negative coefficients for cost variables may be obtained. Other bankers may have various thresholds of rate spreads below which they will not borrow and above which they borrow whatever amount of reserves they "need." There is not necessarily a continuous increase in borrowings by these bankers as the rate spreads become larger and larger. They merely enter the market at a particular rate spread. This type of behavior could produce little statistical significance for these borrowers because changes in rate spreads above the threshold level do not necessarily change the quantity of borrowed reserves demanded. Thus, the positive aggregate relationship could be a result of a larger number of bankers borrowing when rate spreads are greater while some bankers borrow regularly and without much regard for costs.

Quantity Variables

The effect of previous borrowings and changes in unborrowed reserves have quite uniform effects on current borrowings for all equations within each bank. Borrowings lagged one period are almost always significantly positive reflecting the inability of bankers to adjust their portfolios in one week's time. ΔU, indicating changes in the reserve position of the bank is also important. The other forms of these two variables, B-2, B-3, and ΔU-1, ΔU-2, are important to a lesser degree reflecting the lesser importance of events as they become more remote in time.

ΔL is also included in this class of variables. It has only a limited number of significant coefficients for each equation and the greater portion of these have a negative sign rather than the expected positive sign. Because of these results, it is concluded that ΔL is not an important determinant of borrowings.

Surveillance Variables

Federal Reserve surveillance may be an influential factor in bankers' decisions to borrow. The variables used as proxies for surveillance give little evidence. These variables are the least satisfactory with respect to what they are supposed to measure and thus little credence is given to the coefficients obtained for them. It is of interest to note that both I and N are kept by Reserve officials on a weekly basis. If they are used as guides in administering the discount window and surveillance is in part a function of these, then surveillance either has no effect on borrowings or these are inadequate measures of surveillance. If

they are proper measures then the results here indicate little response on the part of bankers to surveillance.

Policy Implications

The implications for discounting as a tool of monetary policy hinge on one conclusion: The impact of the quantity variables, previous borrowings and changes in unborrowed reserves are more uniform and predictable than are the impact of cost variables. If a good monetary policy tool is one which initially achieves precise and predictable effects on the commercial banking system then the discount rate as a tool is not particularly desirable, i.e., changes in the discount rate are not reacted upon in the market in precise and predictable ways. The best indication of this is the diverse pattern of signs for the cost variables. Bankers have different attitudes towards the discount window and some bankers borrow at unfavorable rates to obtain reserves. Others tend to borrow at positive rate spreads. The net result is a differential effect of monetary policy. More importantly, the bankers themselves determine this differential effect in their various reactions to discount rate changes.

Borrowing has been shown to be generally influenced by changes in unborrowed reserves. When Federal Reserve authorities use open market operations or reserve requirement changes they directly affect unborrowed reserves. Bankers react to changes in unborrowed reserves by changing their borrowings in the opposite direction. Since the exact response of bankers at the discount window is unknown, the impact of the other two instruments of monetary policy are also less precise.

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APPENDIX

Table 1. Number of positive coefficients significant[a] at the .10 level

Equation	1	2	3	4	5	6	7	8	9	10
Constant	27 (36)	22 (36)	24 (33)	22 (35)	23 (36)	7 (22)	4 (20)	4 (19)	3 (17)	3 (15)
B-1	32 (33)	32 (33)	32 (33)	32 (32)	32 (33)	32 (33)	32 (33)	31 (33)	32 (33)	32 (32)
B-2	12 (20)	13 (19)	12 (20)	13 (18)	12 (21)	13 (20)	11 (19)	10 (18)	11 (17)	9 (17)
B-3		13 (24)		14 (22)					14 (27)	12 (26)
ΔU	0 (3)	0 (3)	0 (3)	0 (3)	0 (4)	0 (3)	0 (3)	0 (3)	0 (3)	0 (1)
ΔU-1	1 (2)	1 (1)	1 (2)	1 (1)	0 (1)	0 (1)	0 (1)	0 (1)	0 (1)	0 (1)
ΔU-2					0 (2)	0 (1)	0 (2)	0 (0)	0 (1)	0 (2)
r-d	9 (25)	9 (22)	9 (27)	3 (16)	5 (19)	2 (11)	1 (15)	2 (13)	1 (15)	2 (16)
f-d				8 (24)	6 (28)	5 (22)	5 (22)	7 (25)	7 (24)	6 (23)
g-d						9 (25)	4 (24)	7 (24)	6 (23)	6 (20)
$(r-d)^2$			5 (20)		1 (17)		3 (17)			2 (19)
$(f-d)^2$					4 (14)		2 (14)			2 (17)
$(g-d)^2$							1 (16)			1 (21)
$(r-d)^3$			1 (25)							
ΔL				1 (11)	1 (13)	0 (14)	0 (13)	1 (12)	1 (12)	1 (11)
a								2 (16)	3 (19)	1 (22)
I-1								4 (18)		5 (18)
I-2									7 (27)	5 (23)
N-1								2 (21)		12 (25)
N-2									4 (20)	2 (10)

[a]Quantities in parentheses are the numbers of positive coefficients without regard to significance. Since 36 banks are used the maximum number of positive estimates for each coefficient in each equation is 36.

Table 2. Number of negative coefficients significant[a] at the .10 level

Equation	1	2	3	4	5	6	7	8	9	10
Constant	0 (0)	0 (0)	0 (3)	0 (1)	0 (0)	4 (14)	3 (16)	2 (17)	2 (19)	1 (21)
B-1	0 (3)	0 (3)	0 (3)	0 (4)	0 (3)	0 (3)	0 (3)	1 (3)	0 (3)	1 (4)
B-2	9 (16)	12 (17)	9 (16)	12 (18)	10 (15)	9 (16)	10 (17)	11 (18)	12 (19)	13 (19)
B-3		2 (12)		2 (14)					2 (9)	2 (10)
ΔU	25 (33)	25 (33)	25 (33)	26 (33)	27 (32)	27 (33)	27 (33)	27 (33)	27 (33)	27 (35)
ΔU-1	26 (34)	25 (35)	24 (34)	22 (35)	27 (35)	27 (35)	27 (35)	27 (35)	28 (35)	27 (35)
ΔU-2					18 (34)	18 (35)	18 (34)	19 (36)	18 (35)	17 (34)
r-d	0 (11)	0 (14)	1 (9)	3 (20)	3 (17)	9 (25)	6 (21)	9 (23)	9 (21)	7 (20)
f-d				1 (12)	2 (8)	3 (14)	2 (14)	4 (11)	2 (12)	2 (13)
g-d						2 (11)	2 (12)	2 (12)	1 (13)	2 (16)
$(r-d)^2$			1 (16)		5 (19)		2 (19)			3 (17)
$(f-d)^2$					1 (22)		2 (22)			3 (19)
$(g-d)^2$							1 (20)			3 (15)
$(r-d)^3$			8 (11)							
ΔL				6 (25)	6 (23)	6 (22)	6 (23)	5 (24)	8 (24)	6 (25)
a								6 (20)	2 (17)	3 (14)
I-1								4 (18)		3 (18)
I-2									2 (16)	1 (13)
N-1								0 (15)		2 (11)
N-2									2 (16)	12 (26)

[a]Quantities in parentheses are the numbers of negative coefficients without regard to significance. Since 36 banks are used the maximum number of negative estimates for each coefficient in each equation is 36.

Table 3. Regression coefficients[a] for bank 1 which had 107 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	5504.1† (1554.0)	5361.3† (1613.1)	5000.7† (1810.1)	5123.5† (1677.8)	5432.8† (1676.8)	2973.1 (3300.9)	2922.8 (5114.9)	14980. (56890.)	33500. (57390.)	29800. (59270.)
B-1	.412† (.070)	.419† (.071)	.420† (.071)	.420† (.071)	.392† (.071)	.368† (.070)	.376† (.071)	.287† (.085)	.346† (.072)	.263† (.088)
B-2	.140* (.073)	.131* (.077)	.143* (.073)	.133* (.077)	.148† (.071)	.152† (.071)	.147† (.072)	.115 (.073)	.095 (.088)	.084 (.090)
B-3		.022 (.066)		.025 (.066)					.147† (.074)	.149† (.075)
ΔU	-.196† (.029)	-.200† (.029)	-.195† (.029)	-.194† (.029)	-.202† (.028)	-.205† (.028)	-.203† (.028)	-.198† (.028)	-.208† (.028)	-.199† (.029)
ΔU-1	-.107† (.030)	-.105† (.030)	-.107† (.031)	-.105† (.031)	-.016† (.034)	-.167† (.034)	-.166† (.034)	-.166† (.034)	-.179† (.035)	-.172† (.035)
ΔU-2					-.097† (.028)	-.098† (.027)	-.098† (.028)	-.104† (.028)	-.131† (.031)	-.120† (.031)
r-d	2479.2 (5017.1)	2355.1 (5039.7)	-601.1 (10710.0)	-1206.3 (8014.4)	-584.3 (12050.0)	-5844.3 (10050.0)	-9847.6 (16449.0)	-6510.1 (10150.)	-7075.4 (10140.)	-15930. (16960.)
f-d				2928.2 (5150.9)	-2428.9 (6105.4)	-1134.8 (5934.4)	-5786.4 (6964.8)	307.97 (6130.5)	592.37 (6091.6)	-3946.6 (7168.2)
g-d						8062.6 (8435.9)	5203.5 (19540.0)	6980.1 (8429.3)	7971.2 (9287.7)	5827.2 (21650.)
$(r-d)^2$			23830.0 (44410.0)		-4424.5 (15440.0)		-1054.7 (19990.0)			7620.2 (21580.)
$(f-d)^2$					7134.1 (5743.9)		6400.8 (5963.1)			4931.7 (6069.0)
$(g-d)^2$							3360.6 (15480.0)			1282.3 (16970.)
$(r-d)^3$			-21870. (47140.)							
ΔL				-.007 (.036)	.007 (.036)	.008 (.035)	.006 (.035)	.006 (.036)	.010 (.036)	.000 (.036)
a								-26700. (63410.)	-38990. (63820.)	-39390. (68050.)
I-1								.036 (.032)		.030 (.033)
I-2									-.004 (.031)	-.001 (.032)
N-1								1544.0† (781.60)		4287.6† (2066.4)
N-2									489.72 (794.51)	-3430.2* (2853.6)
R^2	.306	.306	.307	.307	.354	.352	.357	.368	.370	.391
F	17.47†	14.51†	12.41	10.83	10.58	11.70	8.856	9.26†	8.59†	6.61†
s.e.[b]	17964.	18004.	18041.	18080.	17556.	17540.	17600.	17459.	17470.	17406.

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 4. Regression coefficients[a] for bank 2 which had 101 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	647.76†	652.19†	665.35†	634.54†	679.00†	879.67†	587.30	-10890.	-10760.	-10110.
	(173.00)	(180.44)	(189.93)	(185.52)	(183.84)	(366.54)	(563.06)	(7425.9)	(7434.5)	(7509.7)
B-1	.498†	.498†	.499†	.499†	.469†	.471†	.472†	.452†	.443†	.448†
	(.069)	(.069)	(.069)	(.069)	(.071)	(.071)	(.071)	(.072)	(.072)	(.077)
B-2	.068	.071	.070	.070	.090	.090	.093	.083	.072	.074
	(.070)	(.079)	(.071)	(.079)	(.071)	(.071)	(.072)	(.073)	(.079)	(.076)
B-3		-.006		-.006					.031	.022
		(.068)		(.068)					(.072)	(.076)
ΔU	-.127†	-.128†	-.127†	-.128†	-.142†	-.139†	-.140†	-.137†	-.136†	-.138†
	(.034)	(.035)	(.034)	(.035)	(.035)	(.035)	(.036)	(.035)	(.035)	(.036)
ΔU-1	-.117†	-.117†	-.117†	-.118†	-.156†	-.156†	-.152†	-.156†	-.160†	-.155†
	(.034)	(.035)	(.035)	(.035)	(.039)	(.039)	(.040)	(.039)	(.040)	(.041)
ΔU-2					-.068*	-.069†	-.063*	-.068*	-.074†	-.067*
					(.035)	(.034)	(.035)	(.035)	(.036)	(.037)
r-d	1266.9†	1267.9†	1502.3	965.24	1119.9	1438.0	1629.6	837.92	833.44	643.15
	(551.0)	(552.8)	(1159.0)	(868.62)	(1319.2)	(1119.2)	(1823.4)	(1168.2)	(1162.5)	(1911.7)
f-d				251.92	580.55	474.83	973.00	391.51	421.40	846.87
				(555.99)	(677.39)	(653.01)	(775.19)	(663.47)	(660.07)	(787.85)
g-d						-657.73	1068.1	591.24	557.97	2480.6
						(932.23)	(2145.8)	(1132.9)	(1111.9)	(2310.1)
$(r-d)^2$			-922.45		157.15		847.45			1356.6
			(4885.7)		(1710.3)		(2227.5)			(2291.6)
$(f-d)^2$					-569.05		-389.59			-580.32
					(636.25)		(655.78)			(668.48)
$(g-d)^2$							-1686.8			-1489.9
							(1696.2)			(1740.1)
$(r-d)^3$			625.66							
			(5174.8)							
ΔL				-.000	-.014	-.011	-.014	-.006	-.011	-.014
				(.037)	(.037)	(.037)	(.037)	(.037)	(.037)	(.038)
a								13380.	13280.	12350.
								(8234.0)	(8243.6)	(8346.7)
I-1								-.003		-.002
								(.003)		(.003)
I-2									-.004	-.003
									(.003)	(.003)
M-1								-20.67		-44.57
								(46.94)		(211.11)
M-2									-29.01	11.48
									(46.57)	(201.59)
R^2	.371	.371	.371	.371	.387	.386	.393	.400	.401	.410
F	23.33†	19.35†	16.51†	14.40†	12.20†	13.56†	10.29†	10.60†	9.80†	7.14†
s.e.[b]	1941.	1946.	1951.	1955.	1940.	1937.	1942.	1930.	1933.	1945.

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 5. Regression coefficients[a] for bank 3 which had 100 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	9450.7†	9143.0†	10070.0†	9343.3†	9225.4†	14000.0†	14700.0†	155300.*	168100.*	223600.*
	(2007.3)	(2123.7)	(2302.7)	(2192.6)	(2203.7)	(4566.3)	(6920.9)	(89580.)	(90650.)	(104300.)
B-1	.274†	.275†	.265†	.277†	.256†	.264†	.256†	.203†	.234†	.178*
	(.071)	(.071)	(.070)	(.071)	(.072)	(.072)	(.072)	(.087)	(.072)	(.093)
B-2	-.006	-.015	.010	-.016	.000	-.001	-.002	-.047	-.037	-.033
	(.071)	(.073)	(.070)	(.073)	(.072)	(.072)	(.072)	(.073)	(.090)	(.094)
B-3		.032		.028					-.017	-.007
		(.070)		(.070)					(.074)	(.076)
δU	-.093†	-.091†	-.078*	-.093†	-.108†	-.114†	-.108†	-.111†	-.113†	-.106†
	(.045)	(.046)	(.046)	(.046)	(.050)	(.049)	(.050)	(.049)	(.049)	(.050)
δU-1	-.123†	-.122†	-.110†	-.119†	-.153†	-.157†	-.153†	-.150†	-.155†	-.146†
	(.045)	(.046)	(.046)	(.045)	(.056)	(.055)	(.056)	(.055)	(.055)	(.057)
δU-2					-.056	-.064	-.056	-.061	-.063	-.053
					(.050)	(.049)	(.050)	(.050)	(.050)	(.051)
r-d	11090.9*	11960.9*	-2357.9	9552.2	-4077.5	19110.0	8155.2	22610.	22500.	23760.
	(6589.5)	(6643.6)	(13890.0)	(10550.0)	(16030.0)	(13550.0)	(21830.0)	(14460.)	(14340.)	(24530.)
f-d				1617.8	5849.1	6434.5	8193.4	8733.1	8212.8	9498.4
				(6797.9)	(8245.4)	(8006.0)	(9460.2)	(8014.6)	(8157.8)	(9509.9)
g-d						-12140.0	-19390.0)	-24640.*	-22570.	-62500.*
						(11180.0)	(25610.0)	(13910.)	(13970.)	(32420.)
$(r-d)^2$			-56020.0		27810.0		15170.0			-7429.9
			(57440.0)		20720.0		(26690.0)			(28790.)
$(f-d)^2$					-6844.4		-7441.7			-10040.
					(7669.5)		(7931.9)			(8070.)
$(g-d)^2$							9880.9			34290.
							(20400.0)			(22570.)
$(r-d)^3$			90610.0							
			(61360.0)							
δL				-.057	-.051	-.052	-.052	-.062	-.062	-.054
				(.043)	(.043)	(.043)	(.043)	(.043)	(.044)	(.044)
a								-166100.*	-179400.*	-235400.†
								(98920.)	(101200.)	(113500.)
I-1								.021		.024
								(.041)		(.046)
I-2									-.005	-.017
									(.042)	(.046)
N-1								1119.3†		1263.0
								(567.1)		(2738.8)
N-2									1093.3*	-9.45
									(570.2)	(2644.20)
R^2	.124	.125	.141	.133	.148	.145	.152	.176	.175	.192
F	5.62†	4.70†	4.58†	3.73†	3.36†	3.65†	2.84†	3.40†	3.09†	2.44†
s.e.[b]	23345.	23392.	23343.	23409.	23316.	23305.	23394.	23052.	23135.	23196.

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 6. Regression coefficients[a] for bank 4 which had 86 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	7047.5† (1721.2)	777.5† (1796.4)	6974.8† (2081.5)	8507.3† (1948.3)	7350.3† (1985.9)	7224.3* (3831.4)	6404.2 (5944.2)	-75090. (49650.)	-80470. (50070.)	-63740. (49970.)
B-1	.221† (.070)	.228† (.070)	.223† (.072)	.213† (.072)	.179† (.072)	.176† (.072)	.179† (.073)	.123 (.085)	.158† (.073)	.171† (.083)
B-2	.128* (.072)	.151† (.074)	.128* (.073)	.140* (.076)	.153† (.075)	.146* (.074)	.153† (.075)	.117 (.076)	.059 (.087)	.076 (.086)
B-3		-.096 (.069)		-.106 (.070)					-.078 (.073)	-.130* (.073)
ΔU	-.071† (.023)	-.074† (.023)	-.072† (.023)	-.073† (.023)	-.081† (.024)	-.081† (.024)	-.080† (.024)	-.074† (.025)	-.073† (.024)	-.062† (.024)
ΔU-1	-.069† (.023)	-.071† (.023)	-.070† (.023)	-.071† (.023)	-.103† (.027)	-.106† (.027)	-.102† (.027)	-.100† (.027)	-.105† (.026)	-.088† (.027)
ΔU-2					-.059† (.023)	-.060† (.023)	-.059† (.023)	-.060† (.024)	-.056† (.024)	-.038 (.024)
r-d	702.9 (5620.6)	605.4 (5608.1)	3263.5 (12080.)	8524. (9224.4)	10340. (13940.)	61871. (11600.)	10030. (18870.)	1766.8 (12070.)	7687.3 (11920.)	2906.5 (19120.)
f-d				-6451.7 (6057.2)	-8372.1 (7153.3)	-4893.9 (7068.)	-7572.2 (8224.7)	-439.92 (7317.4)	-2665.4 (7274.8)	-7325.7 (8167.3)
g-d						722.84 (9595.2)	5432.1 (22170.)	2209.3 (10790.)	-5487.9 (10490.)	9545.9 (22780.)
$(r-d)^2$			8260.1 (51290.)		-11060. (17570.)		-7546.7 (22760.)			-11050. (22460.)
$(f-d)^2$					6356.7 (6661.1)		6963.1 (6917.6)			10060. (6825.1)
$(g-d)^2$							-5879.9 (17710.)			-5826.6 (17080.)
$(r-d)^3$			-16140. (54320.)							
ΔL				.016 (.025)	.028 (.025)	.028 (.026)	.028 (.026)	.027 (.026)	.033 (.026)	.028 (.025)
a								85250. (56190.)	94860.* (56500.)	71830. (55380.)
I-1								.017 (.035)		-.027 (.037)
I-2									.078† (.034)	.058 (.037)
M-1								1426.1* (749.05)		9111.1† (2156.1)
M-2									779.94 (751.78)	-7903.5† (2173.8)
R^2	.106	.115	.107	.121	.144	.139	.144	.163	.174	.254
F	4.72†	4.27†	3.36†	3.38†	3.25†	3.50†	2.69†	3.10†	3.09†	3.50†
s.e.[b]	20219.	20172.	20315.	20199.	20041.	20042.	20140.	19924.	19840.	19110.

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 7. Regression coefficients[a] for bank 5 which had 86 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	1511.4†	1527.3†	1141.3†	1458.1†	1473.3†	620.09	-626.81	-24200.*	-24480.*	-21130.
	(508.5)	(519.31)	(550.08)	(496.0)	(505.58)	(1070.6)	(1645.8)	(12670.)	(12070.)	(15350)
B-1	.396†	.393†	.365†	.366†	.380†	.354†	.361†	.340†	.337†	.343†
	(.069)	(.070)	(.070)	(.067)	(.065)	(.067)	(.067)	(.069)	(.069)	(.079)
B-2	.231†	.224†	.218†	.160*	.160*	.166†	.153†*	.148*	.140*	.140*
	(.069)	(.074)	(.068)	(.072)	(.066)	(.067)	(.066)	(.069)	(.075)	(.076)
B-3		.017		.018					.015	.017
		(.070)		(.066)					(.070)	(.071)
ΔU	-.075†	-.074†	-.073†	-.081†	-.091†	-.084†	-.088†	-.085†	-.084†	-.088†
	(.027)	(.027)	(.270)	(.026)	(.027)	(.027)	(.027)	(.027)	(.027)	(.027)
ΔU-1	-.053*	-.053*	-.056†	-.042	-.052*	-.053*	-.052*	-.053*	-.052*	-.054*
	(.027)	(.027)	(.027)	(.026)	(.028)	(.028)	(.028)	(.028)	(.028)	(.029)
ΔU-2					-.209	-.025	-.029	-.027	-.027	-.030
					(.025)	(.026)	(.025)	(.026)	(.026)	(.026)
r-d	-1687.4	-1718.3	-4979.0	-10639.†	-13430.†	-12660.†	-13760.†	-9940.9†	-9948.5†	-15469.†
	(1672.4)	(1681.3)	(3547.4)	(2015.1)	(1931.9)	(3456.7)	(5542.8)	(3717.1)	(3757.1)	(6290.8)
f-d				7381.2†	10090.†	6522.6†	8037.4†	7286.5†	7492.5†	8710.8†
				(1720.6)	(2040.9)	(1969.4)	(2796.0)	(2121.2)	(2104.5)	(2407.2)
g-d						2558.0	6972.4	1012.7	589.8	774.7
						(2787.0)	(6303.9)	(3128.6)	(3107.1)	(8126.0)
$(r-d)^2$			30960.†		8129.1		12700.†			8801.3
			(15530.)		(4954.0)		(6451.5)			(7293.7)
$(f-d)^2$					-.4411.0†		-4274.6†			-3806.0*
					(1869.9)		(1922.8)			(2004.4)
$(g-d)^2$							-2398.1			1908.3
							(4953.3)			(6013.2)
$(r-d)^3$			-29730.*							
			(16480.)							
ΔL				-.097†	-.098†	-.083†	-.096†	-.091†	-.092†	-.094†
				(.038)	(.038)	(.039)	(.038)	(.039)	(.039)	(.039)
a								27820.*	28150.*	24360.
								(14330.)	(14600.)	(18120.)
I-1								-.000		-.002
								(.008)		(.009)
I-2									.002	.001
									(.008)	(.009)
N-1								-3.60		175.83
								(155.65)		(732.86)
N-2									-34.05	-234.27
									(158.15)	(718.20)
R^2	.326	.326	.339	.396	.418	.402	.425	.414	.415	.431
F	19.14†	15.88†	14.39†	16.01†	13.88†	14.47†	11.77†	11.27†	10.36†	7.80†
s.e.[b]	6009.	6024.	5979.	5729.	5654.	5719.	5649.	5702.	5715.	5709.

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 8. Regression coefficients[a] for bank 6 which had 86 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	1247.5† (314.73)	1142.8† (327.83)	1381.7† (366.64)	1150.0† (330.98)	1404.4† (348.27)	-397.29 (686.81)	-590.90 (1076.7)	52710.* (28960.)	47280. (29760.)	51600.* (30300.)
B-1	.268† (.071)	.260† (.071)	.258† (.071)	.269† (.072)	.264† (.072)	.231† (.072)	.229† (.073)	.171† (.074)	.195† (.072)	.166† (.084)
B-2	.107 (.070)	.090 (.072)	.097 (.071)	.074 (.073)	.066 (.073)	.045 (.072)	.039 (.073)	.031 (.072)	-.008 (.076)	-.010 (.078)
B-3		.078 (.069)		.082 (.069)					.075 (.073)	.067 (.073)
ΔU	-.100† (.027)	-.104† (.027)	-.099† (.027)	-.119† (.028)	-.121† (.029)	-.118† (.028)	-.118† (.028)	-.115† (.029)	-.118† (.028)	-.118† (.028)
ΔU-1	-.021 (.028)	-.022 (.028)	-.019 (.028)	-.023 (.028)	-.042 (.032)	-.037 (.031)	-.038 (.031)	-.048 (.031)	-.036 (.032)	-.048 (.032)
ΔU-2					-.036 (.027)	-.038 (.027)	-.039 (.027)	-.056† (.027)	-.045 (.027)	-.059† (.028)
r-d	58.61 (1042.6)	-7.96 (1043.5)	2239.6 (2254.5)	-1454.9 (1673.0)	628.87 (2533.8)	-5997.4 (2226.5)	-5272.3 (3496.7)	-5174.6† (2192.4)	-5158.7† (2233.9)	-3426.6 (3491.7)
f-d				1206.9 (1100.2)	1119.9 (1310.3)	-428.88 (1255.4)	-434.31 (1468.4)	127.15 (1259.6)	-80.09 (1266.2)	238.05 (1473.0)
g-d						5074.1† (1859.4)	6247.9 (4151.7)	1553.1 (2193.0)	2259.2 (2186.9)	662.55 (4528.3)
$(r-d)^2$			-1959.2 (9231.5)		-3820.0 (3392.8)		-177.48 (4212.0)			-2369.7 (4231.9)
$(f-d)^2$					456.45 (1247.0)		388.04 (1276.5)			615.63 (1277.5)
$(g-d)^2$							-1190.7 (3241.6)			-306.78 (3263.5)
$(r-d)^3$			-1699.1 (9853.8)							
ΔL				-.034 (.024)	-.026 (.024)	-.033 (.024)	-.031 (.024)	-.035 (.023)	-.040* (.024)	-.034 (.024)
a								-61440.* (33350.)	-55070. (34230.)	-59960.* (34740.)
I-1								.015† (.006)		.013† (.006)
I-2									.010* (.006)	.006 (.006)
N-1								-124.23 (140.79)		-202.55 (429.48)
N-2									-107.67 (143.12)	47.56 (425.16)
R^2	.143	.149	.148	.163	.170	.196	.197	.235	.223	.246
F	6.26†	5.74†	4.89†	4.76†	3.96†	5.24†	3.90†	4.89†	4.20†	3.35†
s.e.[b]	3753.	3750.	3760.	3737.	3741.	3674.	3700.	3611.	3647.	3642.

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 9. Regression coefficients[a] for bank 7 which had 85 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	183.34†	197.88†	205.25†	203.60†	223.71†	47.59	-78.51	-2743.3	-2601.7	-3979.0
	(54.14)	(55.91)	(63.09)	(56.15)	(56.13)	(108.85)	(170.19)	(2872.0)	(2885.4)	(2979.4)
B-1	.610†	.607†	.609†	.633†	.578†	.570†	.557†	.563†	.562†	.501†
	(.070)	(.070)	(.070)	(.070)	(.068)	(.069)	(.069)	(.070)	(.070)	(.076)
B-2	.039	.081	.036	.088	.068	.072	.051	.078	.048	.031
	(.071)	(.082)	(.071)	(.081)	(.068)	(.068)	(.069)	(.070)	(.079)	(.079)
B-3		-.067		-.062					.057	.034
		(.065)		(.064)					(.070)	(.070)
ΔU	-.166†	-.167†	-.166†	-.185†	-.210†	-.208†	-.208†	-.209†	-.211†	-.212†
	(.026)	(.026)	(.026)	(.027)	(.027)	(.027)	(.026)	(.027)	(.027)	(.027)
ΔU-1	-.079†	-.082†	-.080†	-.081†	-.133†	-.137†	-.136†	-.135†	-.142†	-.137†
	(.028)	(.027)	(.027)	(.027)	(.029)	(.029)	(.029)	(.030)	(.030)	(.030)
ΔU-2					-.106†	-.110†	-.111†	-.109†	-.118†	-.115†
					(.025)	(.025)	(.025)	(.026)	(.028)	(.028)
r-d	116.29	114.26	271.46	292.67	334.24	-54.68	-450.91	-200.33	-223.26	-909.12
	(171.25)	(171.23)	(369.88)	(269.70)	(399.17)	(338.42)	(554.91)	(371.90)	(376.23)	(606.79)
f-d				-175.25	30.78	-352.05*	-125.43	-360.27*	-327.71	-90.82
				(174.91)	(206.14)	(197.83)	(231.88)	(202.79)	(202.87)	(236.96)
g-d						457.57	1080.5	742.71†	688.13†	1594.0†
						(284.46)	(667.9)	(355.00)	(347.73)	(737.4)
$(r-d)^2$			-975.28		207.97		920.77			1188.0*
			(1525.7)		(511.32)		(673.30)			(698.1)
$(f-d)^2$					-338.62*		-335.36*			-342.44*
					(191.69)		(195.74)			(197.79)
$(g-d)^2$							-458.64			-527.42
							(519.23)			(529.25)
$(r-d)^3$			840.89							
			(1620.0)							
ΔL				-.072†	-.062†	-.063†	-.063†	-.064†	-.062†	-.068†
				(.030)	(.029)	(.029)	(.029)	(.030)	(.030)	(.030)
a								3126.3	3077.5	4342.7
								(3174.2)	(3188.7)	(3266.5
I-1								-.001		-.001
								(.001)		(.001)
I-2									-.000	-.000
									(.001)	(.001)
M-1								-3.373		101.41
								(18.197)		(74.423)
M-2									-12.609	-105.29
									(18.236)	(72.38)
R^2	.441	.444	.442	.462	.512	.511	.522	.516	.516	.536
F	31.23†	26.22†	22.20†	20.98†	20.29†	22.53†	17.44†	16.97†	15.61†	11.88†
s.e.[b]	616.3	616.2	618.7	608.9	582.9	282.3	579.8	583.9	585.2	580.7

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 10. Regression coefficients[a] for bank B which had 85 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	612.37† (213.48)	563.63† (217.95)	555.26† (239.88)	529.08† (223.65)	601.10† (232.38)	309.63 (457.45)	120.10 (717.66)	3860.5 (10740.)	6045.4 (10770.)	5664.6 (10766.)
B-1	.384† (.068)	.369† (.069)	.378†† (.068)	.372† (.070)	.361† (.067)	.351† (.068)	.351† (.069)	.292† (.072)	.300† (.071)	.187† (.082)
B-2	.272† (.069)	.244† (.073)	.270† (.069)	.233† (.074)	.281† (.068)	.281† (.068)	.272† (.070)	.209† (.074)	.195† (.075)	.166† (.075)
B-3		.073 (0.665)		.077 (.067)					.143* (.076)	.116 (.076)
ΔU	-.230† (.038)	-.226† (.038)	-.230† (.039)	-.230† (.039)	-.263† (.040)	-.261† (.039)	-.256†* (.040)	-.251† (.039)	-.265† (.039)	-.258† (.040)
ΔU-1	-.156† (.041)	-.152† (.041)	-.157† (.041)	-.157† (.041)	-.248† (.049)	-.245† (.048)	-.242† (.050)	-.235† (.049)	-.264† (.049)	-.243† (.050)
ΔU-2					-.123† (.040)	-.122† (.040)	-.123† (.040)	-.126† (.040)	-.166† (.042)	-.157† (.042)
r-d	1161.9 (722.5)	1128.7 (727.8)	1088.5 (1596.8)	253.81 (1114.6)	747.4 (1684.8)	-315.51 (1402.6)	-630.70 (2992.1)	724.95 (1448.0)	209.48 (1460.6)	634.12 (2419.2)
f-d				717.88 (714.63)	344.42 (855.49)	313.85 (839.38)	202.45 (974.14)	663.58 (852.58)	552.96 (852.28)	569.89 (977.18)
g-d						848.17 (1190.9)	2980.3 (2791.9)	-480.65 (1409.6)	256.47 (1398.1)	869.74 (3010.1)
$(r-d)^2$			4396.6 (6198.7)		-1090.2 (2183.7)		870.75 (2855.1)			-1191.8 (2940.7)
$(f-d)^2$					481.43 (803.31)		612.31 (830.30)			846.65 (818.72)
$(g-d)^2$							-1973.6 (2194.2)			-1131.9 (2200.4)
$(r-d)^3$			-4879.4 (6629.0)							
ΔL				-.027 (.046)	-.012 (.046)	-.014 (.045)	-.013 (.046)	-.016 (.045)	-.017 (.045)	-.012 (.044)
a								-4373.4 (11960.)	-6403.4 (11990.)	-6577.9 (11960.)
I-1								.003 (.004)		.005 (.004)
I-2									-.003 (.004)	-.003 (.004)
M-1								143.83† (62.12)		893.54† (323.28)
M-2									68.03 (63.10)	-761.94† (304.95)
R^2	.398	.401	.399	.405	.430	.430	.433	.451	.455	.485
F	26.18	22.04	18.64	16.65	14.58	16.29	12.20	13.08†	12.21†	9.67†
s.e.[b]	2487.	2486.	2496.	2490.	2450.	2444.	2455.	2418.	2416.	2381.

[a] Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b] Standard error of estimate.

Table 11. Regression coefficients[a] for bank 9 which had 80 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	233.06†	240.15†	267.16†	228.86†	208.87†	111.69	533.05	6970.2	8194.7	7923.2
	(109.99)	(112.06)	(120.30)	(115.63)	(115.25)	(242.31)	(375.26)	(7715.9)	(7705.7)	(7904.1)
B-1	.481†	.486†	.464†	.464†	.422†	.434†	.419†	.421†	.423†	.350†
	(.069)	(.070)	(.068)	(.068)	(.066)	(.067)	(.066)	(.069)	(.070)	(.072)
B-2	.286†	.297†	.288†	.293†	.287†	.287†	.286†	.269†	.282†	.246†
	(.072)	(.078)	(.072)	(.076)	(.068)	(.069)	(.069)	(.072)	(.077)	(.075)
B-3		-.025		-.045					.008	.038
		(.070)		(.068)					(.076)	(.075)
ΔU	-.099†	-.100†	-.096†	-.096†	-.104†	-.108†	-.105†	-.101†	-.108†	-.098†
	(.022)	(.022)	(.022)	(.022)	(.022)	(.022)	(.022)	(.022)	(.023)	(.022)
ΔU-1	-.063†	.063†	-.061†	-.058†	-.089†	-.098†	-.091†	-.096†	-.096†	-.082†
	(.023)	(.023)	(.022)	(.022)	(.028)	(.028)	(.028)	(.028)	(.029)	(.029)
ΔU-2					-.043†	-.050†	-.044†	-.050†	-.049†	-.041*
					(.022)	(.022)	(.022)	(.022)	(.024)	(.023)
r-d	582.06	624.14	2149.7†	-891.96	703.08	-1194.5	1180.7	-1330.6	-1186.8	1576.4
	(460.83)	(477.04)	(820.1)	(612.58)	(874.81)	(756.65)	(1196.6)	(827.36)	(848.72)	(1252.1)
f-d				1389.9†	796.32*	1194.8†	849.22*	1246.6†	1181.5†	960.41*
				(379.1)	(442.16)	(439.2)	(508.55)	(447.29)	(447.72)	(515.71)
g-d						330.32	-962.99	177.52	297.80	-1820.3
						(625.91)	(1420.3)	(712.05)	(707.79)	(1681.1)
$(r-d)^2$			1449.9		-3187.6†		-3809.9†			-4182.6†
			(3413.0)		(1119.7)		(1449.3)			(1490.5)
$(f-d)^2$					909.94†		865.64†			717.58
					(421.35)		(433.62)			(441.01)
$(g-d)^2$							632.80			1108.4
							(1156.5)			(1299.5)
$(r-d)^3$			-4407.4							
			(3619.3)							
ΔL				-.057	-.054	-.055	-.051	-.059	-.056	-.068
				(.043)	(.042)	(.043)	(.042)	(.043)	(.043)	(.043)
a								-8807.8	-10140.	-9209.0
								(9701.5)	(9696.5)	(9897.7)
I-1								.001		.002
								(.002)		(.002)
I-2									-.001	-.001
									(.002)	(.002)
M-1								23.52		378.50†
								(37.78)		(149.71)
M-2									-3.77	-369.40†
									(38.16)	(146.35)
R^2	.578	.578	.592	.608	.636	.618	.637	.622	.620	.654
F	54.21†	45.00†	40.56†	37.82†	33.68†	34.88†	27.89†	26.17†	23.88†	19.42†
s.e.[b]	134.8	135.1	1333.	1309.	1268.	1296.	1274.	1299.	1305.	1263.

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 12. Regression coefficients[a] for bank 10 which had 78 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	691.61† (280.98)	673.45† (286.29)	750.63† (376.49)	650.45† (286.49)	723.37† (301.03)	-1523.7† (649.72)	-2270.8† (969.20)	-18230. (15340.)	-20530. (15340.)	-18730. (16010.)
B-1	.450† (.068)	.454† (.069)	.456† (.069)	.450† (.070)	.415† (.068)	.324† (.070)	.319† (.071)	.310† (.073)	.303† (.072)	.267† (.080)
B-2	.245† (.069)	.234† (.070)	.243† (.070)	.222† (.070)	.256† (.070)	.181† (.070)	.176† (.071)	.181† (.073)	.175† (.075)	.174† (.076)
B-3		.023 (.066)		.006 (.067)					.037 (.073)	.032 (.075)
ΔU	-.110† (.021)	-.110† (.021)	-.110† (.021)	-.110† (.021)	-.127† (.021)	-.111† (.021)	-.108† (.021)	-.109† (.021)	-.107† (.021)	-.102† (.022)
ΔU-1	-.086† (.022)	-.086† (.021)	-.086† (.021)	-.084† (.021)	-.125† (.025)	-.112† (.025)	-.108† (.025)	-.111† (.025)	-.113† (.025)	-.107† (.025)
ΔU-2					-.064† (.021)	-.062† (.020)	-.059† (.020)	-.062† (.020)	-.067† (.022)	-.060† (.023)
r-d	-404.75 (923.46)	-402.11 (925.60)	520.70 (1977.3)	-2027.5 (1493.7)	-683.24 (2211.6)	-8130.2† (2211.3)	-10520.† (3375.7)	-8298.01 (2408.7)	-8267.1† (2432.3)	-11380.† (4003.2)
f-d				1369.4 (986.84)	1314.9 (1186.9)	-691.81 (1661.1)	-369.23 (1272.4)	-838.31 (1094.0)	-953.48 (1085.0)	-338.51 (1337.9)
g-d						7045.8† (1865.7)	10110.† (3757.3)	8377.41 (2360.2)	8984.2† (2341.8)	12000.† (4182.8)
$(r-d)^2$			-1347.9 (7607.2)		-1448.5 (2703.9)		3700.2 (3413.4)			4247.6 (3867.6)
$(f-d)^2$					-90.52 (1053.3)		-145.95 (1060.8)			-318.73 (1085.3)
$(g-d)^2$							-2296.7 (2854.7)			-2206.6 (3065.4)
$(r-d)^3$			-77.515 (7475.5)							
ΔL				.011 (.019)	.018 (.019)	.019 (.018)	.019 (.018)	.020 (.018)	.019 (.018)	.018 (.018)
a								18190. (16670.)	20980. (16690.)	18160. (17570.)
I-1								-.001 (.005)		.002 (.005)
I-2									-.006 (.005)	-.007 (.005)
N-1								-15.45 (92.28)		460.99 (438.2)
N-2									-35.51 (91.97)	-509.76 (421.31)
R^2	.405	.405	.406	.412	.440	.477	.481	.481	.486	.493
F	27.00†	22.42†	19.16†	17.13†	15.18†	19.72†	14.76†	14.75†	13.84†	10.00†
s.e.[b]	3352.	3360.	3367.	3357.	3294.	3174.	3168.	3169.	3160.	3201.

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 13. Regression coefficients[a] for bank 11 which had 67 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	274.73 (169.39)	285.07* 171.78	298.00 (195.77)	288.86 (178.82)	299.46* (180.28)	669.63* (384.69)	491.04 (594.98)	-12070. (9891.)	-11309. (9925.7)	14370. (10100.)
B-1	.565† (.066)	.571† (.068)	.564† (.067)	.572† (.069)	.525† (.065)	.519† (.064)	.522† (.065)	.468† (.067)	.471† (.068)	.410† (.075)
B-2	.247† (.067)	.260† (.075)	.248† (.68)	.261† (.076)	.276† (.066)	.279† (.064)	.274† (.066)	.228† (.068)	.209† (.073)	.195† (.075)
B-3		-.025 (.063)							.067 (.069)	.065 (.070)
ΔU	-.183† (.031)	-.184† (.031)	-.183† (.031)	-.184† (.031)	-.220† (.031)	-.223† (.031)	-.220† (.031)	-.214† (.031)	-.220† (.031)	-.215† (.031)
ΔU-1	-.120† (.032)	-.122† (.033)	-.120† (.033)	-.120† (.033)	-.209† (.037)	-.209† (.037)	-.206† (.037)	-.207† (.036)	-.212† (.037)	-.209† (.037)
ΔU-2					-.142† (.031)	-.143† (.030)	-.143† (.031)	-.147† (.030)	-.159† (.033)	-.162† (.033)
r-d	209.13 (579.61)	185.74 (579.90)	211.39 (1235.7	212.04 (911.49)	-177.00 (1350.7)	763.43 (1138.3	869.58 (1866.0	903.22 (1177.2)	970.28 (1183.2)	1191.1 (1950.4)
f-d				-26.36 591.24	375.60 (691.02)	490.73 (662.70)	836.23 (787.92)	307.76 (668.26)	523.31 (673.55)	877.53 (802.60)
g-d						-1041.4 (945.9)	47.34 (2186.1)	-355.33 (1091.2)	-882.44 (1073.4)	897.34 (2411.3)
$(r-d)^2$			-1580.0 (5104.9)		575.53 (1746.2)		582.05 (2260.7)			177.36 (2328.8)
$(f-d)^2$					-448.62 (652.49)		-305.90 (674.54)			-270.03 (685.21)
$(g-d)^2$							-1052.0 (1731.3)			-1373.3 (1798.2)
$(r-d)^3$			1815.2 (5425.3)							
ΔL				-.026 (.051)	-.038 (.048)	-.040 (.048)	-.040 (.049)	-.031 (.048)	-.028 (.048)	-.029 (.049)
a								14290. (11240.)	13370. (11280.)	16670. (11480.)
I-1								-.002 (.003)		-.003 (.003)
I-2									.001 (.002)	.002 (.003)
N-1								101.51† (45.96)		529.15* (296.59)
N-2									69.60 (46.26)	-420.79 (281.35)
R^2	.604	.605	.605	.605	.645	.646	.648	.658	.657	.668
F	60.49†	50.22†	42.81†	37.37†	35.09†	39.42†	29.31†	30.69†	28.04†	20.65†
s.e.[b]	2067.	2072.	2078.	2081.	1983.	1975.	1986.	1956.	1964.	1960.

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 14. Regression coefficients[a] for bank 12 which had 65 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	164.44†	126.73†	170.57†	118.76†	161.72†	-22.13	-15.86	-1867.9	-1109.8	-1699.0
	(43.49)	(43.62)	(51.32)	(43.72)	(47.48)	(98.17)	(155.43)	(1676.1)	(1676.5)	(1691.1)
B-1	.763†	.823†	.765†	.804†	.729†	.703†	.709†	.646†	.743†	.664†
	(.069)	(.069)	(.069)	(.070)	(.070)	(.070)	(.070)	(.071)	(.071)	(.070)
B-2	-.228†	-.412†	-.239†	-.405†	-.225†	-.226†	-.228†	-.296†	-.423†	-.496†
	(.069)	(.085)	(.070)	(.085)	(.071)	(.069)	(.071)	(.071)	(.084)	(.081)
B-3		.243†		.235†					.216†	.217†
		(.069)		(.069)					(.072)	(.070)
ΔU	-.040†	-.040†	-.038†	-.043†	-.056†	-.057†	-.057†	-.057†	-.066†	-.058†
	(.018)	(.018)	(.019)	(.018)	(.021)	(.020)	(.021)	(.020)	(.020)	(.019)
ΔU-1	-.033*	-.029	-.030	-.026	-.048†	-.057†	-.050†	-.050†	-.055†	-.051†
	(.019)	(.018)	(.019)	(.018)	(.022)	(.022)	(.022)	(.021)	(.021)	(.020)
ΔU-2					-.038*	-.036*	-.036*	-.037*	-.048†	-.041†
					(.021)	(.020)	(.021)	(.020)	(.020)	(.019)
r-d	118.48	57.79	327.95	-226.01	-8.63	-641.14†	-596.05	-708.34†	-656.87†	-857.05*
	(150.05)	(146.92)	(327.17)	(231.26)	(364.31)	(312.80)	(502.44)	(315.59)	(312.30)	(489.83)
f-d				239.10	276.77	114.95	110.48	231.45	165.19	160.78
				(154.74)	(189.12)	(179.41)	(211.18)	(180.99)	(177.56)	(196.41)
g-d						516.67†	503.46	418.38	388.34	447.46
						(258.75)	(588.53)	(323.90)	(326.73)	(625.86)
$(r-d)^2$			179.19		-385.58		-71.26			246.30
			(1323.5)		(479.79)		(612.57)			(589.40)
$(f-d)^2$					36.80		16.69			65.07
					(176.01)		(181.73)			(168.82)
$(g-d)^2$							.778			-79.98
							(465.51)			(435.30)
$(r-d)^3$			-580.96							
			(1412.8)							
ΔL				-.024	-.017	-.020	-.019	-.014	-.020	-.014
				(.025)	(.026)	(.025)	(.026)	(.024)	(.024)	(.024)
a								1969.2	1152.2	1696.9
								(1906.2)	(1904.6)	(1883.9)
I-1								.002†		.001*
								(.001)		(.001)
I-2									.002†	.002†
									(.001)	(.001)
N-1								65.14†		357.37†
								(25.12)		(73.25)
N-2									6.12	-321.24†
									(25.30)	(71.45)
R^2	.431	.465	.433	.474	.454	.463	.463	.494	.509	.572
F	29.99†	28.50†	21.38†	21.95†	16.04†	18.59†	13.73†	15.51†	15.15†	13.73†
s.e.[b]	536.9	522.1	538.7	520.3	532.8	526.9	531.0	515.7	509.2	481.8

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 15. Regression coefficients[a] for bank 13 which had 64 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	414.16† (145.19)	426.07† (148.97)	385.08† (171.96)	451.15† (151.94)	482.17† (155.90)	-429.48 (322.82)	-440.81 (514.94)	4468.2 (6438.0)	4800.8 (6598.2)	6607.6 (7069.9)
B-1	.531† (.070)	.517† (.071)	.532† (.071)	.544† (.071)	.504† (.072)	.457† (.072)	.449† (.073)	.431† (.072)	.421† (.073)	.360† (.080)
B-2	.104 (.073)	.117 (.081)	.110 (.074)	.119 (.082)	.141* (.074)	.120* (.072)	.118 (.073)	.075 (.074)	.101 (.079)	.074 (.080)
B-3		-.026 (.070)		-.026 (.070)					-.006 (.075)	-.063 (.077)
ΔU	-.193† (.041)	-.194† (.041)	-.194† (.041)	-.205† (.042)	-.232† (.042)	-.215† (.042)	-.212† (.042)	-.224† (.041)	-.216† (.042)	-.215† (.041)
ΔU-1	-.130† (.042)	-.131† (.042)	-.130† (.042)	-.136† (.042)	-.214† (.052)	-.205† (.050)	-.203† (.051)	-.206† (.050)	-.218† (.051)	-.199† (.051)
ΔU-2					-.109† (.042)	-.110† (.041)	-.109† (.042)	-.112† (.041)	-.117† (.044)	-.098† (.044)
r-d	922.10* (533.87)	974.62* (553.23)	1291.0 (1071.3)	1516.0* (812.4)	2159.8* (1207.1)	-178.1 (994.3)	-1046.7 (1654.9)	503.5 (1016.4)	386.52 (1071.1)	67.23 (1716.2)
f-d				-485.8 (511.2)	-579.7 (626.2)	-1613.1† (588.0)	-1596.1† (695.0)	-1358.7† (586.6)	-1496.1† (588.8)	-1451.0† (693.7)
g-d						2656.8† (869.5)	2371.3 (1981.5)	1115.9 (1042.0)	1531.6 (1056.2)	-263.6 (2067.0)
$(r-d)^2$			2067.2 (4433.0)		-609.0 (1550.8)		1065.2 (2015.7)			-65.87 (2050.7)
$(f-d)^2$					-109.7 (582.2)		-316.8 (588.6)			-377.11 (590.70)
$(g-d)^2$							539.3 (1517.7)			1602.3 (1605.7)
$(r-d)^3$			-3090.5 (4720.0)							
ΔL				-.029 (.026)	-.020 (.026)	-.011 (.025)	-.012 (.026)	-.012 (.025)	-.011 (.025)	-.013 (.025)
a								-5674.6 (7080.4)	-5992.0 (7251.4)	-7933.8 (7618.9)
I-1								.007† (.002)		.005* (.003)
I-2									.005* (.002)	.003 (.003)
N-1								46.37 (43.07)		475.60* (256.80)
N-2									29.72 (44.05)	-412.82* (248.55)
R^2	.416	.416	.418	.423	.443	.468	.470	.494	.483	.508
F	28.20†	23.42†	20.10†	17.88†	15.33†	18.93†	14.12†	15.51†	13.64†	10.64†
s.e.[b]	1784.	1788.	1790.	1786.	1765.	1721.	1730.	1691.	1714.	1693.

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 16. Regression coefficients[a] for bank 14 which had 63 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	539.49* (282.42)	461.07 (283.79)	490.06 (327.89)	251.44 (280.26)	466.05 (301.85)	353.75 (628.45)	107.95 (990.47)	13820. (16658.)	23380. (16566.)	21750. (16940.)
B-1	.420† (.065)	.378† (.068)	.417† (.065)	.384† (.066)	.427† (.064)	.427† (.064)	.426† (.065)	.424† (.068)	.357† (.068)	.316† (.074)
B-2	.381† (.066)	.331† (.071)	.384† (.066)	.323† (.068)	.380† (.065)	.382† (.065)	.381† (.066)	.389† (.070)	.335† (.071)	.321† (.074)
B-3		.127* (.068)		.144† (.065)					.217† (.074)	.245† (.076)
ΔU	-.121† (.025)	-.121† (.026)	-.120† (.026)	-.138† (.026)	-.140† (.028)	-.141† (.028)	-.139† (.028)	-.141† (.028)	-.144† (.028)	-.143† (.028)
ΔU-1	-.092† (.026)	-.094† (.026)	-.090† (.026)	-.087† (.025)	-.090† (.031)	-0.91† (.031)	-.089† (.031)	-.090† (.031)	-.104† (.031)	-.101† (.032)
ΔU-2					-.010 (.026)	-.011 (.026)	-.008 (.027)	-.008 (.027)	-.030 (.028)	-.035 (.028)
r-d	251.96 (1030.7)	-110.07 (1042.5)	1877.2 (2090.2)	-3809.4† (1520.7)	-1450.2 (2319.7)	-3175.1 (1932.0)	-1422.5 (3152.8)	-3446.5* (2013.9)	-3930.6† (1974.9)	-1780.6 (3207.3)
f-d				3026.5† (948.5)	2953.5† (1200.3)	2793.2† (1177.7)	3162.2† (1384.2)	2774.5† (1223.8)	2717.9† (1199.6)	3542.6† (1408.2)
g-d						22.40 (1675.3)	2247.5 (3828.3)	-432.71 (1896.2)	-66.15 (1821.40)	2843.8 (4141.8)
$(r-d)^2$			6153.7 (8546.2)		-2559.6 (2963.5)		-1088.9 (3907.1)			-786.60 (3931.4)
$(f-d)^2$					-210.37 (1125.8)		37.98 (1159.3)			146.18 (1161.9)
$(g-d)^2$							-2577.2 (2967.8)			-3526.2 (3087.8)
$(r-d)^3$			-10040. (9077.8)							
ΔL				-.086† (.026)	-.085† (.027)	-.084† (.027)	-.087† (.027)	-.086† (.027)	-.081† (.026)	-.085† (.027)
a								-15270. (18790.)	-25950. (18630.)	-24760. (19130.)
I-1								.002 (.005)		.007 (.006)
I-2									.001 (.005)	.000 (.005)
N-1								-33.48 (106.11)		151.78 (235.08)
N-2									-175.67* (106.33)	-362.65 (228.48)
R^2	.559	.567	.564	.607	.599	.597	.601	.599	.617	.626
F	50.26†	42.99†	36.23†	37.62†	28.88†	31.97†	24.00†	23.77†	23.52†	17.18†
s.e.[b]	3482.	3460.	3481.	3314.	3362.	3363.	3372.	3382.	3315.	3320.

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 17. Regression coefficients[a] for bank 15 which had 61 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	2009.4†	1780.6†	2054.7†	1827.5†	2114.6†	1129.9	-1055.4	-18120.	-14420.	-21340.
	(411.95)	(434.72)	(472.41)	(452.03)	(452.80)	(924.69)	(1426.0)	(15790.)	(16040.)	(16700.)
B-1	.221†	.230†	.221†	.238†	.214†	.197†	.184†	.153*	.195†	.156*
	(.072)	(.072)	(.072)	(.073)	(.074)	(.074)	(.074)	(.078)	(.074)	(.089)
B-2	-.064	-.088	-.064	-.092	-.055	-.056	-.077	-.099	-.109	-.123
	(.072)	(.073)	(.072)	(.074)	(.072)	(.072)	(.072)	(.074)	(.078)	(.079)
B-3		.112		.120*					.120	.095
		(.070)		(.071)					(.074)	(.076)
ΔU	-.053†	-.051†	-.053†	-.050†	-0.71†	-.072†	-.073†	-.071†	-.072†	-.072†
	(.024)	(.024)	(.024)	(.024)	(.026)	(.026)	(.026)	(.026)	(.026)	(.026)
ΔU-1	-.045*	-.041*	-.045*	-.038	-.075†	-.078†	-.081†	-.076†	-.078†	-.079†
	(.024)	(.024)	(.025)	(.025)	(.029)	(.029)	(.029)	(.029)	(.029)	(.029)
ΔU-2					-.054†	-.058†	-.061†	-.061†	-.068†	-.069†
					(.026)	(.026)	(.026)	(.026)	(.027)	(.027)
r-d	-1670.5	-1448.3	-1042.2	-1332.7	-1557.9	-3646.8	-7878.0*	-4140.6	-3719.6	-7913.5
	(1360.4)	(1382.1)	(2928.8)	(2176.7)	(3374.8)	(2834.1)	(4651.8)	(3027.7)	(3025.1)	(5108.4)
f-d				-183.62	687.38	-1253.9	-49.86	-1085.7	-1020.3	121.76
				(1406.3)	(1727.6)	(1668.5)	(1954.1)	(1681.0)	(1673.1)	(1965.4)
g-d						2708.2	13110.†	4139.8	3784.2	13850.†
						(2368.5)	(5500.5)	(2895.4)	(2844.0)	(6095.1)
$(r-d)^2$			-1682.1		1111.1		9710.2*			8650.2
			(12140.)		(4330.9)		(5605.5)			(5834.0)
$(f-d)^2$					-1436.6		-730.98			-698.30
					(1602.6)		(1639.7)			(1658.4)
$(g-d)^2$							-8736.3†			-8079.5*
							(4305.6)			(4421.0)
$(r-d)^3$			795.07							
			(12910.)							
ΔL				-.026	-.007	-.003	-.006	-.003	-.005	-.008
				(.027)	(.028)	(.028)	(.028)	(.028)	(.028)	(.028)
a								19770.	16040.	21440.
								(17200.)	(17460.)	(17930.)
I-1								.001		.001
								(.008)		(.008)
I-2									-.001	-.001
									(.008)	(.008)
M-1								432.56†		378.41
								(209.83)		(675.39)
M-2									295.44	-58.12
									(211.04)	(653.20)
R^2	.077	.088	.077	.093	.104	.106	.130	.127	.136	.157
F	3.30†	3.19†	2.34†	2.51†	2.24†	2.56†	2.38†	2.31†	2.30†	1.91†
s.e.[b]	4918.	4899.	4942.	4912.	4908.	4889.	4861.	4870.	4858.	4862.

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 18. Regression coefficients[a] for bank 16 which had 57 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	276.17†	217.67†	273.23†	214.14†	309.03†	227.27	461.74*	-1352.8	-1202.2	-302.50
	(73.48)	(74.46)	(83.16)	(77.27)	(80.86)	(168.79)	(258.45)	(6496.3)	(6402.4)	(6306.3)
R-1	.787†	.833†	.785†	.834†	.764†	.783†	.763†	.769†	.824†	.847†
	(.068)	(.068)	(.067)	(.070)	(.070)	(.070)	(.070)	(.071)	(.071)	(.072)
R-2	-.198†	-.036†	-.201†	-.363†	-.175†	-.196†	-.170†	-.208†	-.357†	-.266†
	(.068)	(.086)	(.067)	(.087)	(.070)	(.071)	(.071)	(.074)	(.088)	(.093)
R-3		.208†		.207†					.204†	.195†
		(.068)		(.069)					(.074)	(.073)
ΔU	-.027†	-.026†	-.026†	-.025†	-.025†	-.025†	-.026†	-.026†	-.026†	-.024†
	(.010)	(.010)	(.010)	(.010)	(.011)	(.011)	(.011)	(.011)	(.011)	(.011)
ΔU-1	-.029†	-.027†	-.029†	-.027†	-.034†	-.033†	-.034†	-.031†	-.032†	-.029†
	(.010)	(.010)	(.010)	(.010)	(.012)	(.012)	(.012)	(.012)	(.012)	(.013)
ΔU-2					-.005	-.005	-.005	-.005	-.008	-.008
					(.010)	(.010)	(.010)	(.010)	(.010)	(.010)
r-d	106.78	76.69	1069.3†	40.30	1093.1*	-37.21	1486.5*	-101.26	78.34	1395.4*
	(246.89)	(242.01)	(515.8)	(388.16)	(600.03)	(519.80)	(859.95)	(528.89)	(515.30)	(815.34)
f-d				30.96	-250.48	4.34	-148.94	-39.97	42.99	-73.87
				(251.96)	(313.10)	(310.00)	(362.40)	(327.30)	(316.97)	(359.69)
g-d						120.78	-497.74	342.55	-33.54	-507.54
						(434.45)	(966.82)	(544.00)	(526.07)	(1037.5)
$(r-d)^2$			2205.4		-2047.5†		-2372.71			-2214.0†
			(2145.6)		(771.13)		(998.81)			(987.47)
$(f-d)^2$					498.76*		496.46			333.46
					(293.02)		(303.70)			(301.07)
$(g-d)^2$							172.20			201.55
							(775.41)			(764.15)
$(r-d)^3$			-4282.6*							
			(2277.3)							
ΔL				.003	.006	.007	.005	.007	.003	.007
				(.014)	(.015)	(.015)	(.015)	(.015)	(.015)	(.014)
a								1775.3	1547.9	802.21
								(7103.9)	(6998.9)	(6871.7)
I-1								-.001		-.000
								(.001)		(.001)
I-2									.000	.000
									(.000)	(.001)
M-1								7.103		-439.57†
								(52.40)		(171.76)
M-2									14.70	398.29†
									(51.76)	(167.36)
R^2	.475	.499	.497	.500	.500	.476	.500	.480	.500	.537
F	35.81†	32.67†	27.63†	24.27†	19.03†	19.61†	15.77†	14.68†	14.64†	12.00†
S.E.[b]	886.1	867.9	871.9	872.2	878.9	893.9	882.3	897.9	882.2	860.8

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 19. Regression coefficients[a] for bank 17 which had 56 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	141.99† (44.98)	109.76† (41.86)	176.75† (50.22)	93.81† (42.14)	157.41† (47.36)	-.45 97.50	128.55 (156.14)	1623.6 (3523.9)	1057.4 (3482.1)	833.54 (3577.3)
B-1	.647† (.070)	.673† (.069)	.636† (.071)	.669† (.069)	.619† (.071)	.630† (.070)	.615† (.072)	.591† (.072)	.630† (.070)	.637† (.076)
B-2	-.098 (.071)	-.255† (.082)	-.112 (.072)	-.261† (.081)	-.119* (.071)	-.106 (.070)	-.125* (.072)	-.167† (.074)	-.270† (.082)	-.273† (.083)
B-3		.242† (.069)		.249† (.068)					.205† (.074)	.200† (.076)
ΔU	-.024 (.015)	-.021 (.014)	-.023 (.015)	-.038† (.017)	-.039† (.018)	-.037† (.018)	-.037† (.018)	-.036† (.018)	-.038† (.018)	-.037† (.018)
ΔU-1	-.016 (.015)	-.012 (.014)	-.015 (.015)	-.010 (.014)	-.021 (.018)	-.021 (.018)	-.020 (.018)	-.021 (.018)	-.019 (.017)	-.017 (.018)
ΔU-2					-.011 (.014)	-.010 (.014)	-.009 (.015)	-.010 (.014)	-.013 (.014)	-.013 (.015)
r-d	-55.81 (146.47)	-93.87 (142.89)	345.09 (325.07)	-482.93† (224.59)	2.63 (304.38)	-716.97† (301.06)	-212.89 (493.77)	-740.95† (302.50)	-701.84† (297.18)	-383.80 (495.63)
f-d				329.18† (147.12)	259.13 (182.08)	187.63 (178.70)	146.18 (208.68)	221.87 (181.85)	260.78 (177.73)	218.50 (209.97)
g-d						367.44 (251.93)	-63.06 (578.65)	267.89 (329.80)	164.21 (318.39)	-2.12 (622.40)
$(r-d)^2$			-989.05 (1290.3)		-806.11* (483.12)		-870.26 (627.75)			-587.68 (624.99)
$(f-d)^2$					129.61 (171.20)		95.04 (176.04)			103.73 (177.72)
$(g-d)^2$							293.03 (463.69)			112.40 (459.96)
$(r-d)^3$			418.60 (1380.2)							
ΔL				-.015 (.011)	-.012 (.011)	-.011 (.011)	-.011 (.012)	-.010 (.011)	-.013 (.011)	-.013 (.011)
a								-1824.8 (3810.8)	-1199.8 (3765.3)	-879.32 (3860.2)
I-1								-.000 (.001)		-.000 (.001)
I-2									.000 (.001)	.000 (.001)
N-1								64.12† (26.40)		-47.28 (97.19)
N-2									39.10 (26.51)	81.85 (92.59)
R^2	.362	.399	.368	.418	.389	.387	.393	.406	.431	.436
F	22.44†	21.80†	16.31†	17.50†	12.30†	13.61†	10.33†	10.86†	11.09†	7.93†
s.e.[b]	525.2	510.9	525.2	505.4	520.4	519.9	521.2	516.0	506.0	510.9

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 20. Regression coefficients[a] for bank 18 which had 53 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	319.99 (254.55)	372.51 (253.35)	393.43 (292.68)	452.49* (265.13)	356.56 (281.23)	541.57 (603.53)	-498.31 (927.16)	-9819.3 (11040.)	-13260. (11090.)	-17110. (12000.)
B-1	.862† (.070)	.856† (.069)	.860† (.070)	.862† (.069)	.833† (.071)	.832† (.071)	.822† (.071)	.813† (.071)	.826† (.072)	.816† (.074)
B-2	.063 (.070)	.189† (.091)	.066 (.071)	.180† (.090)	.083 (.071)	.087 (.071)	.092 (.071)	.060 (.074)	.153* (.092)	.142 (.093)
B-3		-.136† (.062)		-.132† (.062)					-.129* (.075)	-.112 (.075)
ΔU	-.189† (.025)	-.190† (.024)	-.190† (.025)	-.200† (.025)	-.212† (.026)	-.213† (.026)	-.209† (.026)	-.208† (.026)	-.208† (.026)	-.200† (.027)
ΔU-1	-.085† (.028)	-.089† (.027)	-.087† (.028)	-.084† (.027)	-.108† (.031)	-.109† (.031)	-.112† (.031)	-.110† (.031)	-.102† (.031)	-.107† (.031)
ΔU-2					-.058† (.027)	-.055† (.026)	-.061† (.027)	-.056† (.026)	-.035 (.030)	-.041 (.030)
r-d	1109.0 (895.2)	939.0 (890.4)	1334.0 (1920.9)	1323.2 (1362.4)	682.84 (2207.6)	1376.4 (1794.4)	-39.37 (2985.6)	690.56 (1936.3)	797.97 (1933.0)	-2154.1 (3282.8)
f-d				43.04 (896.29)	-263.43 (1128.2)	454.30 (1076.7)	199.77 (1288.9)	256.91 (1104.8)	304.79 (1105.9)	-329.64 (1301.0)
g-d						-390.22 (1556.7)	(4487.1) (3550.7)	2269.4 (2349.0)	1769.0 (2318.2)	8011.5* (4447.2)
$(r-d)^2$			-4491.8 (7380.5)		23.40 (2643.0)		2752.9 (3411.0)			4227.5 (3806.5)
$(f-d)^2$					886.50 (1039.4)		1403.0 (1090.0)			1235.6 (1105.7)
$(g-d)^2$							-4473.2 (2901.3)			-4196.9 (2899.7)
$(r-d)^3$			4623.2 (7265.7)							
ΔL				-.055† (.026)	-.051* (.027)	-.051* (.027)	-.045* (.027)	-.050* (.027)	-.049* (.027)	-.047* (.027)
a								11700. (12400.)	15130. (12450.)	18360. (13230.)
I-1								-.007 (.005)		-.008 (.005)
I-2									.002 (.005)	.004 (.005)
M-1								91.23 (93.17)		72.18 (529.59)
M-2									126.20 (91.61)	40.33 (546.96)
R^2	.859	.862	.859	.865	.866	.865	.867	.868	.869	.873
F	240.8†	205.2†	170.7†	156.3†	124.3†	138.2†	104.0†	105.18†	97.08†	70.72†
s.e.[b]	3254.	3224.	3268.	3205.	3216.	3214.	3212.	3197.	3198.	3191.

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 21. Regression coefficients[a] for bank 19 which had 49 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	255.0† (124.2)	207.5* (124.5)	204.7 (143.8)	137.2 (126.5)	272.6† (133.8)	-53.8 (289.4)	100.6 (453.3)	-3160. (2977.)	-3141. (2844.)	-3406. (3119.)
B-1	.880† (.068)	.917† (.069)	.867† (.067)	.900† (.069)	.796† (.071)	.796† (.071)	.795† (.072)	.755† (.073)	.783† (.069)	.722† (.075)
B-2	-.102 (.071)	-.246† (.094)	-.098 (.070)	-.251† (.094)	-.043 (.073)	-.047 (.074)	-.046 (.074)	-.026 (.075)	-.274† (.088)	-.291† (.088)
B-3		.156† (.067)		.170† (.066)					.305† (.069)	.317† (.071)
ΔU	-.155† (.024)	-.146† (.024)	-.142† (.024)	-.137† (.024)	-.162† (.026)	-.168† (.026)	-.163† (.026)	-.167† (.026)	-.160† (.024)	-.148† (.024)
ΔU-1	-.084† (.026)	-.078† (.025)	-.075† (.025)	-.071† (.025)	-.116† (.030)	-.121† (.030)	-.116† (.031)	-.118† (.030)	-.137† (.029)	-.123† (.029)
ΔU-2					-.063† (.026)	-.067† (.026)	-.064† (.026)	-.065† (.026)	-.101† (.026)	-.096† (.026)
r-d	518.9 (484.2)	299.3 (494.6)	176.3* (960.)	-1153. (729.)	847.1 (1075.7)	-932.5 (909.8)	388.6 (1451.4)	-456.3 (943.4)	-901.6 (901.1)	1706. (1451.)
f-d				1152.† (455.)	785.0 (549.8)	588.1 (538.2)	656.9 (629.9)	994.6* (561.9)	989.0* (528.1)	1018.* (603.6)
g-d						762.3 (762.1)	540.5 (1722.1)	-344.0 (939.4)	49.41 (865.89)	-2562. (2033.)
$(r-d)^2$			6201. (3903.)		-2151. (1385.)		-1801. (1785.)			-4034.† (1775.)
$(f-d)^2$					207.5 (514.0)		205.2 (532.3)			757.7 (509.7)
$(g-d)^2$							-140.3 (1355.2)			1075. (1462.)
$(r-d)^3$			-9374.† (4177.)							
ΔL				-.006 (.029)	.006 (.029)	.003 (.029)	.006 (.029)	.005 (.029)	.007 (.027)	.013 (.027)
a								3373. (3381.)	3163. (3236)	3965. (3720.)
I-1								.005† (.002)		.004* (.002)
I-2									.007† (.002)	.007† (.002)
N-1								4.76 (52.53)		315.1 (238.4)
N-2									-74.99 (49.91)	-367.1 (229.3)
R^2	.691	.700	.703	.710	.713	.711	.713	.721	.749	.764
F	88.71†	76.51†	66.22†	59.55†	48.04†	53.10†	39.69†	41.07†	43.63†	33.22†
s.e.[b]	1591.	1574.	1570.	1556.	1553.	1555.	1561.	1541.	1465.	1441.

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 22. Regression coefficients[a] for bank 20 which had 44 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	237.17† (99.04)	269.59† (100.39)	71.80 (109.05)	223.58† (98.22)	187.77* (102.55)	-82.96 (231.75)	208.63 (358.35)	107.72 (5232.7)	-1684.4 (5203.6)	-2625.5 (5575.4)
B-1	.590† (.069)	.576† (.069)	.552† (.067)	.507† (.069)	.482† (.071)	.464† (.071)	.450† (.072)	.468† (.072)	.457† (.071)	.439† (.080)
B-2	.009 (.074)	.071 (.082)	.000 (.072)	.067 (.079)	.013 (.072)	.007 (.072)	-.012 (.073)	.010 (.075)	.056 (.080)	.043 (.081)
B-3		-.113* (.066)		-.138† (.064)					-.075 (.072)	-.063 (.076)
ΔU	-.272† (.032)	-.276† (.032)	-.260† (.032)	-.263† (.032)	-.275† (.033)	-.274† (.033)	-.264† (.033)	-.273† (.033)	-.271† (.032)	-.262† (.033)
ΔU-1	-.157† (.036)	-.166† (.036)	-.143† (.035)	-.166† (.035)	-.215† (.042)	-.215† (.042)	-.204† (.042)	-.214† (.042)	-.210† (.042)	-.199† (.043)
ΔU-2					-.084† (.034)	-.087† (.034)	-.084† (.034)	-.086† (.034)	-.070* (.037)	-.066* (.037)
r-d	1591.8† (447.6)	1709.4† (474.4)	1604.9† (754.13)	421.22 (575.41)	380.65 (841.07)	-219.8 (718.4)	-379.5 (1162.5)	-280.01 (803.30)	-196.38 (805.58)	-441.92 (1367.4)
f-d				1479.3† (373.42)	1074.1† (445.1)	1057.9† (417.9)	713.2 (484.8)	1071.5† (487.8)	961.37† (474.85)	879.02* (527.24)
g-d						828.0 (608.6)	-864.4 (415.8)	918.55 (729.08)	1246.5* (719.4)	-1014.7 (1782.6)
$(r-d)^2$			11830.0† (3166.3)		-327.99 (1105.0)		-754.4 (1416.2)			-432.39 (1576.7)
$(f-d)^2$					401.65 (404.63)		198.5 (415.8)			135.33 (420.66)
$(g-d)^2$							1720.6 (1102.4)			2019.5 (1316.9)
$(r-d)^3$			-13430.0† (3339.8)							
ΔL				-.016 (.046)	-.006 (.046)	-.009 (.046)	-.009 (.046)	-.013 (.046)	-.011 (.045)	-.009 (.046)
a								-177.30 (6441.0)	2132.5 (6414.1)	3839.5 (7906.8)
I-1								-.001 (.002)		.000 (.002)
I-2									-.004† (.002)	-.004* (.002)
N-1								-5.90 (46.75)		-1.27 (199.42)
N-2									9.93 (45.63)	-46.47 (200.49)
R^2	.588	.594	.620	.624	.630	.632	.639	.633	.644	.651
F	56.58†	48.08†	45.63†	40.54†	32.92†	37.02†	28.17†	27.44†	26.46†	19.18†
s.e.[b]	1294.	1288.	1250.	1246.	1242.	1236.	1234.	1245.	1229.	1234.

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 23. Regression coefficients[a] for bank 21 which had 42 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	215.99† (96.514)	236.1† (97.943)	205.10* (112.72)	167.51* (99.92)	109.33 (103.05)	55.38 (231.27)	-445.79 (357.47)	444.29 4582.6	-190.91 (4595.9)	-3364.6 (4830.9)
B-1	.487† (.073)	.489† (.073)	.486† (.073)	.509† (.071)	.507† (.071)	.495† (.073)	.501† (.073)	.500† (.074)	.500† (.074)	.549† (.082)
B-2	.142* (.073)	.103† (.082)	.138* (.074)	.156* (.081)	.097 (.074)	.123* (.073)	.079 (.074)	.132* (.077)	.148* (.083)	.091 (.086)
B-3		-.084 (.072)		-.074 (.071)					-.076 (.079)	-.071 (.083)
ΔU	-.154† (.035)	-.147† (.036)	-.154† (.035)	-.153* (.036)	-.151† (.037)	-.165† (.036)	-.155† (.037)	-.166† (.037)	-.157† (.038)	-.148† (.039)
ΔU-1	-.100† (.035)	-.107† (.036)	-.100† (.036)	-.112† (.035)	-.121† (.041)	-.126† (.041)	-.126† (.041)	-.128† (.042)	-.123† (.042)	-.126† (.043)
ΔU-2					-.029 (.034)	-.031 (.035)	-.036 (.035)	-.031 (.035)	-.018 (.038)	-.027 (.038)
r-d	859.88† (422.35)	1002.† (439.07)	456.51 (763.79)	-380.29 (666.78)	-879.8 (862.49)	-711.90 (770.52)	-1803.4 (1143.2)	-729.22 (799.57)	-568.08 (808.63)	-2198.0* (1303.3)
f-d				1143.† (354.58)	745.8* (428.54)	1068.9† (424.38)	716.50 (491.91)	1060.2† (434.55)	1043.9† (435.44)	717.01 (503.60)
g-d						270.57 (599.00)	2390.7* (1379.0)	414.27 (972.07)	152.87 (967.41)	2716.2* (1636.8)
$(r-d)^2$			41.94 (3100.3)		23.97 (1085.20)		1614.3 (1419.0)			2135.1 (1533.3)
$(f-d)^2$					734.09* (415.46)		898.29† (430.23)			877.70† (444.68)
$(g-d)^2$							-1768.6 (1094.1)			-1879.3* (1131.6)
$(r-d)^3$			710.62 (3289.6)							
ΔL				-.025 (.031)	-.024 (.031)	-.023 (.031)	-.031 (.031)	-.025 (.032)	-.024 (.032)	-.031 (.032)
a								-451.50 (5203.7)	250.61 (5221.4)	3218.4 (5412.7)
I-1								-.000 (.002)		-.000 (.002)
I-2									.001 (.002)	.001 (.002)
N-1								-20.89 (60.97)		-232.75 (242.04)
N-2		—							13.36 (62.07)	260.30 (238.91)
R^2	.444	.448	.446	.477	.485	.476	.493	.477	.480	.502
F	37.74†	26.73†	22.56†	22.25†	18.24†	19.65†	15.54†	14.54†	13.48†	10.35†
s.e.[b]	1252.	1251.	1257.	12.25	1220.	1228.	1217.	1237.	1238.	1227.

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 24. Regression coefficients[a] for bank 22 which had 38 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	596.97† (260.56)	399.59 (248.65)	431.47 (303.74)	403.67 (254.41)	591.51† (288.15)	-151.27 (640.72)	-635.31 (1000.0)	-16060. (14730.)	-11870. (13660.)	-10960. (15310.)
B-1	.676† (.068)	.722† (.064)	.670† (.068)	.723† (.065)	.675† (.072)	.667† (.072)	.663† (.072)	.606† (.074)	.652† (.066)	.614† (.073)
B-2	-.043 (.068)	-.270† (.078)	-.043 (.068)	-.272† (.079)	-.044 (.071)	-.045 (.071)	-.044 (.071)	-.101 (.073)	-.303† (.078)	-.313† (.078)
B-3		.311† (.061)		.312† (.062)					.334† (.067)	.319† (.068)
ΔU	-.179† (.027)	-.166† (.025)	-.178† (303.7)	-.167† (.026)	-.176† (.028)	-.178† (.028)	-.177† (.028)	-.181† (.028)	-.173† (.026)	-.172† (.026)
ΔU-1	-.013† (.028)	-.098† (.027)	-.127† (.028)	-.097† (.027)	-.124† (.032)	-.127† (.032)	-.124† (.032)	-.124† (.032)	-.129† (.030)	-.121† (.031)
ΔU-2					.004 (.029)	-.001 (.029)	.002 (.029)	-.009 (.029)	-.038 (.028)	-.030 (.029)
r-d	-523.64 (952.22)	-545.88 (897.56)	-1178.1 (2029.5)	-556.03 (1469.6)	-1397.5 (2380.0)	-2383.3 (2029.4)	-4891.4 (3282.0)	-2804.4 (2918.2)	-1565.0 (1957.6)	-2609.2 (3248.6)
f-d				-.398 (949.84)	979.75 (1218.8)	-577.19 (1178.1)	93.22 (1300.2)	145.55 (1191.5)	19.89 (1111.8)	196.97 (3248.6)
g-d						2084.3 (1652.9)	3736.4 (3816.4)		-280.00 (1632.0)	-559.57 (4077.6)
$(r-d)^2$			9777.8 (8423.4)		2095.6 (3035.7)		4546.1 (3916.4)			2159.4 (3993.4)
$(f-d)^2$					-1306.7 (1122.5)		-1342.5 (1159.6)			-860.49 (1079.1)
$(g-d)^2$							-879.01 (3026.0)			579.52 (3247.5)
$(r-d)^3$			-10080. (8935.2)							
ΔL				-.006 (.025	.006 (.027)	.005 (.027)	.006 (.027)	.001 (.026)	-.009 (.025)	-.003 (.025)
a								17270. (16690.)	12570. (15480.)	11470. (17770.)
I-1								.007 (.005)		-.000 (.005)
I-2									.017† (.005)	.017† (.005)
N-1								262.97† (116.29)		779.16 (481.49)
N-2									-11.90 (111.05)	-727.96 (469.37)
R^2	.493	.551	.496	.552	.497	.497	.503	.520	.590	.599
F	38.53†	40.43†	27.63†	30.04†	19.08†	21.34†	16.14†	17.25†	21.04†	15.34†
s.e.[b]	3414.	3218.	3420.	3234.	3444.	3434.	3440.	3383.	3134.	3142.

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 25. Regression coefficients[a] for bank 23 which had 35 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	312.19†	299.78*	376.18†	263.50*	330.44†	656.98*	568.99	11310.	8179.9	10400.
	(151.32)	(153.49)	(174.90)	(157.15)	(164.80)	(362.19)	(561.73)	(8257.6)	(8344.2)	(9657.8)
B-1	.484†	.477†	.484†	.478†	.477†	.478†	.477†	.482†	.458†	.501†
	(.069)	(.070)	(.069)	(.070)	(.070)	(.070)	(.070)	(.071)	(.072)	(.087)
B-2	.224†	.207†	.227†	.207†	.216†	.226†	.218†	.237†	.205†	.196†
	(.070)	(.077)	(.070)	(.078)	(.070)	(.070)	(.071)	(.073)	(.078)	(.080)
B-3		.036		.029					.079	.085
		(.069)		(.069)					(.076)	(.077)
ΔU	-.082†	-.082†	-.082†	-.090†	-.095†	-.094†	-.095†	-.093†	-.092†	-.094†
	(.021)	(.021)	(.021)	(.023)	(.024)	(.024)	(.024)	(.024)	(.024)	(.024)
ΔU-1	-.052†	-.053†	-.052†	-.056†	-.064†	-.062†	-.063†	-.060†	-.064†	-.067†
	(.021)	(.021)	(.021)	(.022)	(.024)	(.024)	(.025)	(.025)	(.025)	(.025)
ΔU-2					-.012	-.012	-.011	-.010	-.015	-.014
					(.022)	(.022)	(.022)	(.022)	(.023)	(.023)
r-d	-281.64	-255.97	104.59	-1078.1	-975.42	-303.78	201.91	-39.91	-8.18	1152.8
	(545.79)	(549.09)	(1163.5)	(868.58)	(1345.3)	(1125.1)	(1065.3)	(1276.8)	(1272.5)	(2280.9)
f-d				681.69	1302.3*	1109.4*	1796.5†	1192.1*	1345.0†	1818.7†
				(555.40)	(683.8)	(653.40)	(773.5)	(671.74)	(668.6)	(802.02)
g-d						-1068.5	-147.66	-1894.1	-2188.6*	-2466.5
						(921.70)	(2155.4)	(1227.5)	(1210.8)	(2047.7)
$(r-d)^2$			-3504.0		444.53		348.31			-919.98
			(4752.4)		(1710.2)		(2249.9)			(2525.5)
$(f-d)^2$					-939.42		-799.09			-841.21
					(632.30)		(649.82)			(658.60)
$(g-d)^2$							-972.51			168.87
							(1701.9)			(1885.4)
$(r-d)^3$			3338.8							
			(5038.9)							
ΔL				-.015	-.017	-.017	-.019	-.018	-.015	-.017
				(.023)	(.023)	(.023)	(.023)	(.023)	(.023)	(.023)
a								-11510.	-8221.4	-10370.
								(8979.5)	(9065.6)	(10250.)
I-1								-.001		-.002
								(.003)		(.003)
I-2									.003	.003
									(.003)	(.003)
M-1								-72.52		-281.89
								(62.08)		(329.47)
M-2									-78.59	185.84
									(61.73)	(315.52)
R^2	.458	.459	.460	.463	.471	.468	.476	.475	.480	.490
F	33.50†	27.86†	23.83†	21.09†	17.16†	18.96†	14.45†	14.42†	13.50†	9.88†
s.e.[b]	1926.	1930.	1933.	1931.	1929.	1928.	1929.	1930.	1926.	1934.

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 26. Regression coefficients[a] for bank 24 which had 26 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	340.12†	380.04†	422.82†	382.84†	373.29†	531.63†	496.56	-7955.8	-3814.0	-4441.6
	(103.42)	(106.46)	(123.89)	(111.56)	(116.02)	(251.68)	(387.35)	(8738.6)	(8648.2)	9097.1
B-1	.056	.072	.051	.080	.060	.059	.053	.067	.057	-.056
	(.070)	(.071)	(.070)	(.071)	(.070)	(.070)	(.071)	(.071)	(.071)	(.088)
B-2	.157†	.163†	.150†	.161†	.158†	.162†	.153†	.170†	.194†	.159†
	(.070)	(.070)	(.070)	(.070)	(.070)	(.070)	(.071)	(.072)	(.071)	(.073)
B-3		-.105		-.106					-.072	-.070
		(.070)		(.070)					(.072)	(.073)
ΔU	-.001	-.002	-.000	-.004	-.007	-.006	-.006	-.006	-.006	-.008
	(.006)	(.006)	(.006)	(.006)	(.007)	(.006)	(.007)	(.007)	(.006)	(.007)
ΔU-1	-.004	-.004	-.003	-.004	-.012	-.011	-.011	-.011	-.010	-.010
	(.006)	(.006)	(.006)	(.006)	(.007)	(.007)	(.007)	(.007)	(.007)	(.007)
ΔU-2					-.011*	-.012*	-.012*	-.012*	-.011*	-.009
					(.006)	(.006)	(.006)	(.006)	(.006)	(.006)
r-d	-394.96	-462.87	12.25	-509.23	-271.74	-185.57	389.81	-40.74	-262.72	-172.55
	(371.96)	(373.52)	(790.10)	(385.42)	(903.82)	(761.73)	(1237.5)	(773.96)	(769.16)	(1799.6)
f-d				44.53	473.87	330.06	769.26	618.02	425.18	652.87
				(382.10)	(468.13)	(403.93)	(532.02)	(482.49)	(474.22)	(551.88)
g-d						-551.85	23.01	-1038.9	-786.67	-513.47
						(635.20)	(1470.5)	(714.4)	(704.39)	(1545.7)
$(r-d)^2$			-4101.9		-155.92		-149.13			494.20
			(3325.0)		(1172.3)		(1518.0)			(1580.5)
$(f-d)^2$					-476.25		-375.86			-285.69
					(440.89)		(456.73)			(464.11)
$(g-d)^2$							-693.16			-624.52
							(1176.3)			(1221.7)
$(r-d)^3$			3972.5							
			(3552.8)							
ΔL				-.005	-.006	-.005	-.006	-.004	-.004	-.005
				(.004)	(.005)	(.004)	(.005)	(.004)	(.004)	(.005)
a								9694.9	5315.9	5836.6
								(9688.8)	(9586.7)	(10150.)
I-1								.002		.003*
								(.002)		(.002)
I-2									-.000	-.001
									(.002)	(.002)
M-1								-106.49		486.29†
								(86.30)		(246.92)
M-2									-161.40*	-614.26†
									(87.38)	(246.05)
R^2	.039	.050	.046	.056	.069	.065	.076	.088	.098	.130
F	1.60	1.72	1.36	1.44	1.42	1.51	1.30	1.53	1.59*	1.53*
s.e.[b]	1332.	1327.	1333.	1330.	1328.	1327.	1330.	1321.	1317.	1311.

[a] Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b] Standard error of estimate.

Table 27. Regression coefficients[a] for bank 25 which had 25 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	219.39 (142.69)	200.61 (142.51)	-23.53 (163.63)	249.81* (144.82)	252.33 (156.39)	-132.27 (363.18)	173.77 (557.68)	-62650.† (22550.)	-61450.† (23570.)	-56180.† (23270.)
B-1	.635† (.070)	.630† (.070)	.610† (.070)	.648† (.071)	.633† (.072)	.625† (.072)	.610 (.072)	.504† (.072)	.543† (.075)	.500† (.076)
B-2	.045 (.075)	-.032 (.087)	.023 (.074)	-.046 (.088)	.045 (.076)	.036 (.076)	.022 (.077)	-.059 (.076)	-.073 (.086)	-.086 (.084)
B-3		.123* (.074)		.135* (.074)					.058 (.079)	.037 (.086)
ΔU	-.026† (.012)	-.026† (.012)	-.021* (.012)	-.047† (.016)	-.051† (.016)	-.050† (.016)	-.045 (.016	-.041† (.015)	-.043† (.016)	-.038† (.016)
ΔU-1	-.022* (.012)	-.020* (.012)	-.018 (.012)	-.018 (.012)	-.031† (.014)	-.032† (.014)	-.028 (.014	-.027† (.013)	-.029† (.013)	-.023* (.013)
ΔU-2					-.020* (.012)	-.020 (.012)	-.016 (.012	-.016 (.011)	-.020* (.012)	-.013 (.011)
r-d	3187.4† (674.7)	2993.1† (681.7)	2592.9† (1155.2)	3004.0† (682.1)	2662.5† (1502.0)	2272.0† (1101.9)	1342.6 (1804.9)	2496.6† (1071.5)	2670.1† (1000.6)	212.61 (1757.0)
f-d				-153.19 (608.55)	355.82 (705.99)	-261.67 (683.78)	-266.28 (779.69)	-944.32 (697.48)	-666.86 (736.41)	-786.56 (760.81)
g-d						1100.0 (938.81)	-980.24 (2099.7)	1354.4 (1076.0)	473.44 (1069.0)	2048.3 (2230.1)
$(r-d)^2$			15190.0† (4883.1)		1019.6 (1702.7)		585.95 (2174.7)			3769.0 (2453.4)
$(f-d)^2$					-447.70 (629.77)		-671.51 (642.21)			-851.86 (685.92)
$(g-d)^2$							2373.4 (1716.5)			-233.02 (2036.4)
$(r-d)^3$			-15660.0† (5129.2)							
ΔL				-.042† (.020)	-.040† (.020)	-.038* (.020)	-.036* (.020)	-.030 (.018)	-.032* (.020)	-.029 (.019)
a								80200.† (28580.)	78030.† (29880.)	71320.† (29530.)
I-1								-.007† (.002)		-.009† (.003)
I-2									-.000 (.003)	.002 (.003)
N-1								703.06† (217.72)		
N-2									556.03† (237.24)	-34.50 (694.08)
R^2	.679	.683	694	.691	.691	.692	.698	.729	.714	.737
F	83.72†	70.85†	63.55†	54.43†	43.23†	48.54†	36.77†	42.91†	36.45†	28.90†
s.e.[b]	1940.	1932.	1903.	1919.	1927.	1918.	1916.	1813.	1869.	1814.

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 28. Regression coefficients[a] for bank 26 which had 19 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	61.49*	57.38	94.92†	48.79	43.65	-140.95	-256.36*	5681.3*	5768.2*	5366.9*
	(36.81)	(37.09)	(42.44)	(38.33)	(40.19)	(92.98)	(140.35)	(3295.0)	(3293.2)	(3210.2)
B-1	.833†	.837†	.842†	.840†	.767†	.743†	.725†	.737†	.753†	.646†
	(.068)	(.070)	(.067)	(.070)	(.070)	(.070)	(.071)	(.070)	(.072)	(.079)
B-2	-.194†	-.246†	-.190†	-.256†	-.149†	-.159†	-.160†	-.134*	-.216†	-.167*
	(.069)	(.088)	(.068)	(.089)	(.071)	(.070)	(.069)	(.073)	(.088)	(.087)
B-3		.067		.071					.057	-.034
		(.072)		(.072)					(.074)	(.080)
ΔU	-.005	-.006	-.002	-.001	-.014	-.013	-.010	-.014	-.013	-.011
	(.012)	(.012)	(.012)	(.013)	(.014)	(.013)	(.013)	(.013)	(.013)	(.013)
ΔU-1	-.038†	-.039†	-.036†	-.039†	-.053†	-.053†	-.049†	-.052†	-.052†	-.047†
	(.012)	(.012)	(.012)	(.012)	(.013)	(.013)	(.013)	(.013)	(.013)	(.013)
ΔU-2					-.037†	-.034†	-.032†	-.033†	-.033†	-.029†
					(.013)	(.013)	(.013)	(.013)	(.013)	(.013)
r-d	447.25†	395.60†	116.54	285.41	53.28	-28.49	-832.77*	-57.24	-19.49	-1099.8†
	(161.54)	(170.91)	(300.89)	(238.83)	(339.30)	(280.28)	(451.43)	(295.83)	(304.71)	(468.3)
f-d				95.35	223.50	-98.53	-47.02	-122.59	-36.63	-121.35
				(142.49)	(170.57)	(164.39)	(191.77)	(167.82)	(167.96)	(191.75)
g-d						553.12†	817.11	620.09*	404.54	589.53
						(244.29)	(530.76)	(351.96)	(354.21)	(448.14)
$(r-d)^2$			-2884.2†		654.75		1205.60†			1207.2†
			(1220.2)		(431.00)		(548.14)			(542.08)
$(f-d)^2$					-203.99		-246.32			-346.75†
					(162.38)		(165.59)			(168.47)
$(g-d)^2$							-7.20			528.97
							(433.83)			(448.14)
$(r-d)^3$			3858.3†							
			(1297.1)							
ΔL				.013	.013	.014	.013	.013	.014	.013
				(.011)	(.011)	(.011)	(.011)	(.011)	(.011)	(.010)
a								-6345.3*	-6520.0*	-6417.4*
								(3581.9)	(3578.0)	(3483.9)
I-1								-.001		-.002†
								(.001)		(.001)
I-2									.001	.001*
									(.001)	(.001)
N-1								-50.56		327.73†
								(37.38)		(164.06)
N-2									-60.09	-403.26†
									(37.55)	(157.93)
R^2	.594	.596	.615	.599	.619	.623	.637	.635	.637	.671
F	57.93†	48.38†	44.70†	36.48†	31.35†	35.64†	27.94†	27.72†	25.65†	20.95†
s.e.[b]	501.6	501.8	491.0	502.0	492.2	488.2	482.8	484.0	484.1	467.2

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 29. Regression coefficients[a] for bank 27 which had 14 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	44.27 (29.41)	47.22 (29.55)	61.23* (35.11)	32.44 (30.11)	52.11 (32.39)	-227.3† (75.0)	-293.5* (113.1)	2776. (3417.)	3950. (3388.)	3285. (3458.)
B-1	.848† (.067)	.834† (.068)	.832† (.068)	.835† (.068)	.787† (.069)	.749† (.068)	.745† (.069)	.750† (.068)	.707† (.070)	.659† (.074)
B-2	-.179† (.066)	-.121 (.087)	-.179† (.066)	-.134 (.087)	-.150† (.070)	-.176† (.068)	-.176† (.069)	-.184† (.074)	-.070 (.085)	-.111 (.089)
B-3		-.069 (.068)		-.092 (.068)					-.159† (.072)	-.158† (.074)
ΔU	-.048† (.014)	-.047† (.014)	-.047† (.014)	-.042† (.014)	-.062† (.016)	-.059† (.015)	-.060† (.015)	-.056† (.015)	-.053† (.015)	-.052† (.015)
ΔU-1	-.072† (.014)	-.073† (.014)	-.072† (.014)	-.080† (.014)	-.108† (.019)	-.108† (.018)	-.108† (.018)	-.106† (.018)	-.108† (.018)	-.108† (.018)
ΔU-2					-.042† (.016)	-.047† (.016)	-.048† (.016)	-.047† (.016)	-.046† (.016)	-.044† (.016)
r-d	76.81 (113.05)	90.29 (113.81)	409.0* (244.3)	-125.7 (175.8)	195.5 (268.5)	-703.4† (232.7)	-610.4* (363.6)	-752.0† (283.8)	-780.1† (269.4)	-676.3* (387.1)
f-d				188.1 (117.5)	199.3 (140.0)	-88.76 (129.23)	-30.35 (152.94)	-104.1 (132.6)	-94.89 (131.92)	-32.52 (152.79)
g-d						748.0† (200.1)	679.1† (425.2)	786.3† (271.1)	764.7† (252.9)	778.7* (445.9)
$(r-d)^2$			-326.3 (986.8)		-432.5 (352.3)		-73.62 (436.17)			190.4 (460.8)
$(f-d)^2$					-61.41 (129.38)		-93.45 (130.20)			-76.30 (130.28)
$(g-d)^2$							48.54 (333.72)			-86.23 (363.23)
$(r-d)^3$			-218.3 (1054.3)							
ΔL			.023* (.012)	.022* (.012)	.022* (.012)	.018 (.012)	.020* (.012)	.021* (.012)	.023* (.012)	.023* (.012)
a								-3323. (3812.)	-4661. (3780.)	-3879. (3859.)
I-1								-.001 (.001)		-.000 (.001)
I-2									-.000 (.001)	-.000 (.001)
M-1								-2.992 (33.37)		202.9* (105.7)
M-2									5.647 (32.353)	-163.8* (96.9)
R^2	.555	.561	.564	.573	.589	.612	.613	.616	.625	.636
F	50.07†	41.91†	36.18†	32.73†	27.64†	33.95†	25.21†	25.55†	24.37†	17.94†
s.e.[b]	402.2	402.2	401.8	398.5	393.1	381.1	383.4	381.8	378.3	377.9

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 30. Regression coefficients[a] for bank 28 which had 14 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	32.22* (18.83)	26.27 (18.56)	42.92* (22.07)	21.20 (18.98)	32.45 (20.98)	-128.30† (47.81)	-78.03 (72.53)	337.11 (1421.8)	1126.2 (1403.1)	414.77 (1525.6)
B-1	.757† (.066)	.800† (.066)	.759† (.066)	.778† (.068)	.717† (.076)	.673† (.072)	.651† (.076)	.6569† (.072)	.710† (.072)	.657† (.074)
B-2	-.096 (.068)	-.261† (.086)	-.098 (.069)	-.260† (.086)	-.098 (.073)	-.109 (.070)	-.113 (.071)	-.117 (.073)	-.242† (.084)	-.248† (.085)
B-3		.197† (.065)		.189† (.066)					.200† (.070)	.164† (.071)
ΔU	-.107† (.018)	-.096† (.018)	-.106† (.018)	-.096† (.018)	-.106† (.018)	-.105† (.018)	-.104† (.018)	-.1072† (.017)	-.100† (.017)	-.104† (.017)
ΔU-1	-.083† (.018)	-.073† (.018)	-.082† (.018)	-.072† (.018)	-.087† (.023)	-.087† (.022)	-.089† (.023)	-.086† (.022)	-.089† (.022)	-.084† (.021)
ΔU-2					-.008 (.019)	-.010 (.018)	-.012 (.019)	-.013 (.019)	-.029 (.019)	-.032* (.018)
r-d	-5.38 (70.53)	-22.71 (69.37)	116.92 (152.54)	-161.07 (109.68)	-51.72 (177.95)	-525.32† (149.80)	-533.22† (238.47)	-612.14† (161.85)	-404.26† (161.39)	-538.62† (249.56)
f-d				120.94 (74.22)	114.82 (90.23)	-7.26 (84.22)	-65.28 (100.31)	-46.74 (86.90)	12.22 (84.70)	-74.99 (97.65)
g-d						444.64† (126.03)	161.96 (275.19)	572.65† (142.36)	312.61† (138.59)	265.03 (322.04)
$(r-d)^2$			-443.32 (582.59)		-192.08 (213.59)		-165.49 (268.74)			-19.81 (281.42)
$(f-d)^2$					35.23 (86.65)		25.98 (86.99)			23.54 (83.59)
$(g-d)^2$							287.07 (227.58)			182.92 (253.47)
$(r-d)^3$			286.80 (577.37)							
ΔL				-.006 (.013)	-.010 (.014)	-.008 (.013)	-.008 (.013)	-.007 (.013)	-.001 (.012)	.000 (.012)
a								-543.42 (1676.9)	-1479.6 (1655.2)	-604.62 (1827.6)
I-1								-.001* (.000)		-.001† (.000)
I-2									.001† (.000)	.001† (.000)
N-1								24.53 (24.19)		165.49† (76.73)
N-2									-22.17 (24.40)	-173.11† (73.90)
R^2	.538	.559	.540	.565	.548	.574	.579	.583	.600	.625
F	46.17†	41.56†	32.94†	31.62†	23.46†	29.04†	21.86†	22.26†	21.95†	17.18†
s.e.[b]	256.2	251.1	256.8	250.6	256.5	248.6	249.2	247.8	243.2	238.5

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 31. Regression coefficients[a] for bank 29 which had 10 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	14.08 (8.80)	10.87 (8.60)	17.65 (10.55)	13.77 (8.84)	23.44† (9.860)	-24.78 (22.71)	-13.15 (34.91)	7.50 (503.01)	55.26 (492.15)	108.33 (528.92)
B-1	.656† (.066)	.742† (.068)	.644† (.066)	.748† (.068)	.650† (.066)	.648† (.066)	.642† (.066)	.642† (.067)	.731† (.070)	.717† (.072)
B-2	-.344† (.065)	-.506† (.078)	-.357† (.066)	-.490† (.078)	-.342† (.066)	-.349† (.066)	-.354† (.006)	-.351† (.067)	-.486† (.079)	-.484† (.080)
B-3		.247† (.069)		.238† (.069)					.225† (.070)	.218† (.072)
ΔU	-.005 (.003)	-.005 (.003)	-.005 (.003)	-.009† (.004)	-.010† (.004)	-.009† (.004)	-.009† (.004)	-.010† (.004)	-.009† (.004)	-.009† (.004)
ΔU-1	-.008† (.003)	-.008† (.003)	-.008† (.003)	-.007† (.003)	-.009* (.005)	-.009* (.005)	-.009* (.005)	-.009* (.005)	-.009* (.005)	-.008* (.005)
ΔU-2					-.003 (.004)	-.002 (.004)	-.002 (.004)	-.002 (.004)	-.003 (.004)	-.002 (.004)
r-d	37.40 (33.93)	32.20 (33.01)	155.34† (73.02)	73.028 (51.671)	186.81† (82.73)	-15.67 (69.77)	81.50 (112.19)	-20.62 (71.21)	11.18 (69.55)	82.98 (113.74)
f-d				-34.34 (33.51)	-26.92 (42.34)	-74.20* (40.55)	-58.25 (47.87)	-77.11* (41.89)	-59.77 (40.69)	-58.85 (47.98)
g-d						117.47† (59.10)	102.51 (131.80)	131.56* (73.31)	62.65 (70.70)	55.50 (152.32)
$(r-d)^2$			26.98 (298.60)		-178.10* (107.47)		-115.77 (137.20)			-106.35 (140.55)
$(f-d)^2$					-3.96 (39.92)		-8.047 (41.24)			3.82 (41.25)
$(g-d)^2$							-8.080 (104.86)			2.93 (108.55)
$(r-d)^3$			-243.33 (317.14)							
ΔL				-.008† (.003)	-.008† (.003)	-.008 (.004)	-.008† (.003)	-.008† (.004)	-.007* (.004)	-.006* (.004)
a								-32.03 (548.00)	-84.77 (535.87)	-128.46 (566.67)
I-1								-.000 (.000)		-.000 (.000)
I-2									.000 (.000)	.000 (.000)
M-1								1.504 (3.950)		.238 (9.075)
M-2									.586 (3.846)	-.206 (8.996)
R^2	.346	.386	.360	.401	.376	.378	.383	.381	.412	.417
F	21.02†	20.65†	15.75†	16.36†	11.66†	13.14†	9.91†	9.78†	10.25†	7.35†
s.e.[b]	121.8	118.4	121.2	117.5	120.5	120.0	120.4	120.8	118.0	119.0

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 32. Regression coefficients[a] for bank 30 which had 9 weeks of borrowing between January 7, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	11.57† (5.39)	12.18† (5.45)	11.08* (6.34)	12.06† (5.68)	16.31† (6.15)	6.15 (13.90)	17.13 (21.58)	219.48 (287.19)	205.68 (313.00)	-68.78 (260.75)
R-1	-.045 (.070)	-.043 (.070)	-.069 (.071)	-.043 (.070)	-.054 (.072)	-.036 (.072)	-.054 (.073)	-.218† (.072)	-.106 (.078)	-.191† (.062)
R-2	.044 (.070)	.042 (.070)	.004 (.070)	.043 (.070)	.027 (.071)	.038 (.072)	.030 (.073)	-.137* (.071)	-.040 (.079)	-.105* (.063)
R-3		-.056 (.071)		-.057 (.072)					-.127 (.079)	-.002 (.063)
ΔU	.003 (.002)	.003 (.002)	.003 (.002)	.003 (.003)	.002 (.003)	.002 (.003)	.002 (.003)	.001 (.002)	.002 (.003)	-.001 (.002)
ΔU-1	.005† (.002)	.005† (.002)	.005† (.002)	.005† (.002)	.003 (.003)	.004 (.003)	.003 (.003)	.003 (.002)	.004 (.003)	.002 (.002)
ΔU-2					-.002 (.002)	-.002 (.002)	-.002 (.002)	-.002 (.002)	-.002 (.002)	.000 (.002)
r-d	38.52* (20.78)	40.45* (20.94)	110.28† (44.86)	38.44 (32.95)	109.78† (52.12)	28.29 (42.49)	114.71 (69.93)	110.57† (41.26)	63.83 (46.06)	92.90* (56.24)
f-d				1.69 (21.34)	9.94 (26.11)	-6.75 (25.59)	12.51 (30.16)	15.31 (23.98)	-1.35 (25.90)	31.57 (23.74)
g-d						15.16 (36.14)	.708 (81.182)	-150.28† (44.98)	-44.81 (49.97)	-12.14 (71.19)
$(r-d)^2$			220.66 (179.50)		-96.07 (66.97)		-95.26 (85.91)			-16.40 (69.28)
$(f-d)^2$					-16.86 (24.45)		-16.13 (25.28)			25.00 (20.52)
$(g-d)^2$							-5.94 (64.67)			-92.03* (52.98)
$(r-d)^3$			-378.64* (193.36)							
ΔL				.000 (.003)	-.000 (.003)	.000 (.003)	-.000 (.003)	-.002 (.003)	.000 (.003)	-.005† (.002)
a								-191.70 (315.07)	-198.89 (343.01)	97.22 (281.71)
I-1								.000 (.000)		.000 (.000)
I-2									-.000 (.000)	-.000 (.000)
N-1								61.52† (9.60)		181.52† (16.46)
N-2									25.91† (11.86)	-138.13† (17.41)
R^2	.053	.056	.085	.056	.074	.057	.074	.225	.086	.458
F	2.20*	1.94*	2.61†	1.44	1.54	1.30	1.28	4.62†	1.38	8.67†
s.e.	73.69	73.76	72.77	74.13	73.79	74.27	74.16	67.86	73.88	57.68

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 33. Regression coefficients[a] for bank 31 which had 8 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	24.37 (15.50)	20.06 (15.38)	14.41 (18.37)	18.11 (15.99)	12.75 (17.34)	97.61† (40.49)	4.16† (62.77)	391.38 (900.09)	445.42 (689.06)	384.67 (915.24)
B-1	.594† (.068)	.648† (.070)	.588† (.068)	.652† (.071)	.590† (.069)	.592† (.069)	.577† (.068)	.570† (.069)	.605† (.072)	.600† (.071)
B-2	-.289† (.068)	-.397† (.079)	-.292† (.068)	-.401† (.080)	-.295† (.069)	-.306† (.069)	-.318† (.068)	-.329† (.069)	-.411† (.079)	-.395† (.079)
B-3		.180† (.070)		.181† (.070)					.124* (.072)	.010 (.073)
ΔU	-.006 (.007)	-.005 (.007)	-.006 (.007)	-.005 (.007)	-.006 (.007)	-.006 (.007)	-.006 (.007)	-.006 (.007)	-.005 (.007)	-.006 (.007)
ΔU-1	-.006 (.007)	-.006 (.007)	-.006 (.007)	-.006 (.007)	-.006 (.008)	-.006 (.008)	-.007 (.008)	-.007 (.008)	-.007 (.007)	-.008 (.007)
ΔU-2					-.001 (.007)	-.001 (.007)	-.001 (.007)	-.001 (.007)	-.001 (.007)	-.003 (.007)
r-d	.123 (59.582)	-1.58 (58.76)	-201.85 (126.62)	-28.02 (94.02)	240.83* (6.33)	126.33 (123.83)	56.84 (197.66)	81.80 (124.59)	94.00 (121.79)	29.61 (190.57)
f-d				22.08 (61.18)	55.15 (75.33)	100.47 (72.90)	87.78 (84.52)	84.43 (73.54)	63.33 (72.78)	43.90 (84.00)
g-d						-209.48† (102.95)	-638.45† (235.69)	-149.75 (113.53)	-153.91 (110.15)	-403.10 (250.01)
$(r-d)^2$			269.45 (525.52)		364.97* (189.14)		494.03 (240.00)			57.66 (240.25)
$(f-d)^2$					-45.32 (69.88)		-78.82 (71.20)			-81.22 (76.55)
$(g-d)^2$							426.02† (186.08)			281.10 (190.34)
$(r-d)^3$			56.69 (557.39)							
MaxS										
$(MaxS)^2$										
ΔL				.003 (.007)	.002 (.007)	.002 (.007)	.003 (.007)	.001 (.007)	.003 (.007)	.002 (.007)
a								-368.43 (1066.8)	-459.71 (1053.5)	-319.34 (1081.6)
I-1								-.000 (.000)		-.000 (.000)
I-2									-.000 (.000)	.000 (.000)
N-1								46.67† (19.91)		-101.41* (59.76)
N-2									58.26† (20.02)	146.36† (61.15)
R^2	.286	.309	.297	.311	.299	.303	.327	.325	.351	.377
F	15.86†	14.70†	11.81†	10.99†	8.25†	9.35†	7.74†	7.66†	7.89†	6.22†
s.e.[b]	214.5	211.5	214.0	212.4	215.2	214.2	212.0	212.3	208.8	207.3

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 34. Regression coefficients[a] for bank 32 which had 7 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	168.21*	143.65	120.48	123.33	140.41	265.71	188.33	-5002.0	-3864.8	-4299.7
	(91.91)	(91.69)	(110.22)	(95.58)	(103.77)	(238.47)	(375.09)	(4315.7)	(4263.3)	(4509.5)
B-1	.561†	.604†	.559†	.593†	.542†	.540†	.540†	.536†	.570†	.602†
	(.068)	(.070)	(.068)	(.071)	(.070)	(.070)	(.070)	(.071)	(.072)	(.088)
B-2	-.271†	-.357†	-.269†	-.346†	-.248†	-.247†	-.247†	-.239†	-.335†	-.336†
	(.069)	(.078)	(.069)	(.079)	(.071)	(.071)	(.071)	(.074)	(.080)	(.082)
B-3		.157†		.158†					.174†	.189†
		(.071)		(.071)					(.073)	(.075)
ΔU	.003	.001	.004	.003	.003	.003	.003	.003	.003	.003
	(.011)	(.011)	(.011)	(.011)	(.012)	(.012)	(.012)	(.012)	(.012)	(.012)
ΔU-1	-.011	-.015	-.011	-.016	-.018	-.019	-.019	-.020	-.022*	-.023
	(.011)	(.011)	(.011)	(.011)	(.013)	(.013)	(.013)	(.013)	(.013)	(.014)
ΔU-2					-.011	-.012	-.012	-.013	-.013	-.013
					(.011)	(.011)	(.012)	(.011)	(.011)	(.012)
r-d	-167.3	-176.9	-518.8	-405.8	-704.5	-172.9	-464.0	309.02	545.03	133.16
	(352.3)	(348.9)	(752.3)	(558.0)	(842.6)	(779.8)	(1194.8)	(843.67)	(840.76)	(1301.9)
f-d				193.9	343.8	339.3	449.2	458.99	532.92	540.87
				(361.5)	(446.4)	(434.1)	(512.2)	(453.50)	(440.36)	(515.27)
g-d						-328.3	-18.81	-615.15	-1008.7	-1118.5
						(608.7)	(1424.3)	(718.50)	(868.6)	(1067.7)
$(r-d)^2$			2341.2		520.7		602.0			534.71
			(3132.7)		(1125.3)		(1452.7)			(1596.0)
$(f-d)^2$					-215.5		-182.8			-243.51
					(416.2)		(434.3)			(433.51)
$(g-d)^2$							-213.9			362.14
							(1144.5)			(1258.7)
$(r-d)^3$			-2055.3							
			(3325.6)							
ΔL				.007	.007	.008	.007	.008	.011	.011
				(.009)	(.010)	(.010)	(.010)	(.010)	(.010)	(.010)
a								6101.0	4748.2	5304.2
								(4955.7)	(4899.5)	(5368.8)
I-1								-.000		-.002
								(.002)		(.002)
I-2									.002	.003
									(.002)	(.002)
M-1								-76.35		-192.22
								(136.03)		(481.97)
M-2									-187.70	-15.07
									(135.09)	(475.70)
R^2	.260	.278	.262	.281	.269	.269	.270	.275	.304	.309
F	13.92†	12.65†	9.96†	9.55†	7.11†	7.92†	5.88†	6.04†	6.38†	4.59†
s.e.[b]	1267.	1255.	1272.	1259.	1276.	1273.	1282.	1277.	1255.	1267.

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 35. Regression coefficients[a] for bank 33 which had 5 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	19.08 12.53	17.38 (12.58)	29.52† (14.85)	19.66 (12.99)	20.27	-72.69† (32.61)	-28.18 (48.99)	1431.6 (977.71)	1328.7 (978.8)	1040.3 (1041.0)
B-1	-.014 (.071)	-.013 (.071)	-.029 (.071)	-.032 (.071)	-.047 (.072)	-.069 (.071)	-.079 (.072)	-.090 (.072)	-.094 (.072)	-.101 (.073)
B-2	-.014 (.071)	-.013 (.071)	-.026 (.071)	-.022 (.071)	-.035 (.071)	-.072 (.072)	-.086 (.073)	-.074 (.073)	-.094 (.073)	-.080 (.084)
B-3		.088 (.071)		.060 (.072)					.098 (.074)	.002 (.075)
ΔU	-.002 (.004)	-.002 (.004)	-.002 (.004)	-.000 (.005)	.000 (.005)	-.000 (.005)	-.000 (.005)	-.002 (.005)	-.002 (.005)	-.001 (.005)
ΔU-1	-.003 (.004)	-.002 (.004)	-.003 (.004)	-.003 (.004)	-.002 (.004)	-.003 (.004)	-.002 (.004)	-.004 (.004)	-.004 (.004)	-.004 (.004)
ΔU-2					.001 (.004)	.000 (.004)	.000 (.004)	-.000 (.004)	-.001 (.004)	-.001 (.004)
r-d	22.02 (47.72)	20.92 (47.66)	180.93* (102.89)	-71.98 (73.87)	50.30 (118.71)	-282.97† (97.21)	-155.62 (157.97)	-360.71† (105.67)	-353.02† (108.36)	-248.41 (179.35)
f-d				97.19† (49.26)	109.25* (10.51)	17.40 (56.97)	25.39 (67.85)	18.51 (60.33)	16.68 (59.93)	28.46 (68.24)
g-d						239.37† (85.52)	60.66 (186.31)	315.21† (94.29)	319.39† (95.13)	172.17 (232.34)
$(r-d)^2$			-337.78 (389.15)		-210.35 (142.13)		-197.76 (180.83)			-196.34 (226.79)
$(f-d)^2$					-13.92 (55.33)		-39.91 (57.51)			-29.67 (59.80)
$(g-d)^2$							149.16 (153.21)			138.47 (182.70)
$(r-d)^3$			108.18 (382.40)							
ΔL				.002 (.006)	.002 (.006)	.001 (.006)	.001 (.005)	.002 (.006)	.001 (.005)	.002 (.006)
a								-1642.8 (1074.3)	-1523.9 (1075.9)	-1157.2 (1160.3)
I-1								-.000 (.000)		-.000 (.000)
I-2									-.000* (.000)	-.000 (.000)
M-1								-20.26 (22.19)		-33.36 (66.44)
M-2									-17.55 (22.01)	9.19 (66.07)
R^2	.004	.012	.019	.032	.042	.066	.075	.087	.092	.102
F	.152	.385	.542	.805	.844	1.532	1.289	1.52	1.49	1.17
s.e.[b]	173.7	173.4	173.2	172.5	172.5	169.9	170.4	169.3	169.2	170.6

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 36. Regression coefficients[a] for bank 34 which had 4 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	4.42 (4.54)	2.49 (4.23)	5.17 (5.47)	2.57 (4.41)	4.81 (5.16)	12.18 (11.95)	19.72 (18.73)	-275.72 (236.85)	-171.88 (223.71)	-171.46 (257.79)
B-1	.247† (.007)	.234† (.007)	.247† (.007)	.234† (.007)	.246† (.007)	.246† (.007)	.246† (.008)	.245† (.008)	.234† (.007)	.234† (.007)
B-2	-.058† (.007)	-.064† (.007)	-.058† (.007)	-.064† (.007)	-.058† (.007)	-.058† (.007)	-.058† (.008)	-.059† (.008)	-.064† (.007)	-.064† (.007)
B-3		.038† (.007)		.038† (.007)					.037† (.007)	.037† (.007)
ΔU	-.000 (.000)	-.000 (.000)	-.000 (.000)	-.000 (.000)	-.000 (.000)	-.000 (.000)	-.000 (.000)	-.000 (.000)	-.000 (.000)	-.000 (.000)
ΔU-1	-.000 (.000)	-.000 (.000)	-.000 (.000)	-.000 (.000)	-.000 (.000)	-.000 (.000)	-.000 (.000)	-.000 (.000)	-.000 (.000)	-.000 (.000)
ΔU-2					-.000 (.000)	-.000 (.000)	-.000 (.000)	-.000 (.000)	.000 (.000)	.000 (.000)
r-d	-7.12 (17.57)	-4.25 (16.32)	-7.49 (37.56)	-3.97 (25.82)	-6.96 (43.32)	8.64 (36.44)	(27.71) (59.76)	-14.36 (40.99)	-8.61 (38.28)	-11.12 (66.99)
f-d				-.39 (16.62)	3.30 (22.02)	7.99 (21.25)	10.31 (25.19)	9.78 (21.95)	5.52 (20.35)	6.37 (24.32)
g-d						-21.15 (30.45)	-51.56 (70.35)	5.55 (38.65)	3.26 (35.68)	-.93 (79.89)
$(r-d)^2$			-47.55 (155.72)		3.08 (56.12)		-30.86 (72.80)			3.19 (74.32)
$(f-d)^2$					-5.27 (20.80)		-6.47 (21.52)			-2.91 (20.55)
$(g-d)^2$							24.49 (55.75)			4.67 (55.15)
$(r-d)^3$			55.34 (165.36)							
ΔL				-.000 (.000)	-.000 (.000)	-.000 (.000)	-.000 (.000)	-.000 (.000)	-.000 (.000)	-.000 (.000)
a								308.92 (253.18)	191.51 (239.03)	191.73 (268.95)
I-1								.000 (.000)		.000 (.000)
I-2									.000 (.000)	.000 (.000)
N-1								.000 (.000)		.000 (.000)
N-2									.000 (.000)	.000 (.000)
R^2	.850	.872	.850	.872	.851	.851	.851	.852	.872	.872
F	225.†	223.†	159.†	166.†	110.†	123.†	91.†	91.85†	99.86†	70.24†
s.e.[b]	63.17	58.64	63.48	58.94	63.91	63.67	64.12	63.91	59.58	60.38

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 37. Regression coefficients[a] for bank 35 which had 4 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	6.19*	4.90	-4.98	6.85*	1.99	10.37	38.79†	624.29*	577.53*	-248.63
	(3.68)	(3.60)	(4.12)	(3.73)	(3.81)	(9.64)	(13.65)	(348.16)	(346.17)	(350.72)
B-1	.661†	.740†	.589†	.747†	.648†	.668†	.596†	.664†	.750†	.671†
	(.067)	(.069)	(.065)	(.069)	(.063)	(.067)	(.062)	(.068)	(.070)	(.067)
B-2	-.348†	-.504†	-.366†	-.505†	-.359†	-.357†	-.380†	-.365†	-.513†	-.531†
	(.067)	(.080)	(.063)	(.080)	(.062)	(.067)	(.060)	(.066)	(.080)	(.077)
B-3		.235†		.238†					.242†	.188†
		(.070)		(.069)					(.071)	(.068)
ΔU	.003	.001	.003	.001	.002	.002	.001	.002	.001	-.000
	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)
ΔU-1	.001	-.001	.001	-.001	-.002	-.003	-.004	-.003	-.004	-.005
	(.003)	(.003)	(.003)	(.003)	(.004)	(.004)	(.004)	(.004)	(.004)	(.004)
ΔU-2					-.004	-.005	-.005	-.004	-.004	-.004
					(.003)	(.003)	(.003)	(.003)	(.003)	(.003)
r-d	-22.12	-18.93	-114.52†	16.10	-57.77*	17.96	-31.94	18.10	11.89	-35.00
	(14.23)	(13.90)	(29.36)	(21.87)	(33.14)	(20.96)	(42.25)	(29.50)	(28.59)	(43.90)
f-d				-29.00†	-72.48†	-27.44	-86.52†	-32.45*	-41.83†	-87.96†
				(14.02)	(16.46)	(17.29)	(18.03)	(18.05)	(17.39)	(18.00)
g-d						-5.66	-184.48†	-37.25	-9.33	-151.29†
						(24.53)	(51.82)	(31.22)	(29.91)	(58.13)
$(r-d)^2$			585.16†		55.59		-55.27			-44.26
			(122.13)		(42.33)		(51.31)			(52.41)
$(f-d)^2$					70.11†		52.36†			56.94†
					(15.38)		(15.32)			(15.43)
$(g-d)^2$							175.56†			158.84†
							(41.14)			(42.75)
$(r-d)^3$			-510.20†							
			(127.94)							
ΔL				.000	.001	.000	.001	-.000	.000	.001
				(.002)	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)
a								-675.56*	-621.85	310.94
								(382.66)	(380.06)	(483.77)
I-1								.000		.000
								(.000)		(.000)
I-2									-.000	-.000
									(.000)	(.000)
M-1								4.70		27.25
								(11.93)		(26.41)
M-2									-7.97	-42.04*
									(11.55)	(25.52)
R^2	.342	.378	.418	.391	.448	.361	.497	.373	.416	.529
F	20.60†	19.95†	20.12†	15.67†	15.68†	12.20†	15.73†	9.45†	10.40†	11.56†
s.e.[b]	50.81	49.54	48.03	49.25	47.14	50.58	45.24	50.52	48.89	44.46

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.

Table 38. Regression coefficients[a] for bank 36 which had 2 weeks of borrowing between January 2, 1963 and December 21, 1966

Equation	1	2	3	4	5	6	7	8	9	10
Constant	4,350 (11,608)	4.418 (11.632)	-17.53 (13.587)	3.883 (12.206)	.343 (12.909)	21.266 (30.082)	33.265 (47.016)	-71.118 (634.42)	-82.335 (639.57)	-154.2 (673.3)
B-1	-.035 (.065)	-.098 (.147)	-.090 (.067)	-.095 (.148)	-.031 (.065)	-.033 (.064)	-.035 (.066)	-.040 (.065)	-.204 (.148)	-.206 (.150)
B-2	.370† (.065)	.371† (.065)	.335† (.065)	.368† (.066)	.364† (.065)	.369† (.065)	.361† (.068)	.371† (.065)	.363† (.065)	.357† (.069)
B-3		.154 (.324)		.160 (.326)					.411 (.327)	.399 (.331)
ΔU	-.005 (.005)	-.005 (.005)	-.006 (.005)	-.003 (.006)	-.003 (.006)	-.003 (.006)	-.003 (.006)	-.004 (.006)	-.004 (.006)	-.004 (.006)
ΔU-1	-.004 (.005)	-.004 (.005)	-.005 (.005)	-.004 (.005)	-.014† (.006)	-.014† (.006)	-.014† (.006)	-.014† (.006)	-.016† (.006)	-.016† (.006)
ΔU-2					-.017† (.005)	-.017† (.005)	-.017† (.005)	-.017† (.005)	-.018† (.005)	-.018† (.005)
r-d	135.7† (46.4)	137.2† (46.7)	88.66 (96.24)	155.3† (72.1)	81.38 (109.85)	157.2* (92.2)	156.3 (149.8)	148.6 (97.8)	157.9 (97.6)	147.1 (156.2)
f-d				-10.62 (46.90)	44.72 (56.50)	43.18 (54.91)	59.70 (64.62)	33.49 (55.85)	42.21 (56.05)	51.92 (65.83)
g-d						-58.19 (77.20)	-116.9 (179.5)	-16.67 (85.17)	-31.35 (84.87)	-71.66 (191.73)
$(r-d)^2$			1307.0† (404.3)		82.58 (142.52)		4.70 (188.45)			7.96 (194.20)
$(f-d)^2$					-39.81 (52.05)		-43.01 (53.95)			-45.89 (54.73)
$(g-d)^2$							59 45 (146.41)			69.93 (155.33)
$(r-d)^3$			-1400.1† (438.5)							
ΔL				.005 (.006)	.007 (.006)	.007 (.005)	.007 (.006)	.007 (.006)	.008 (.006)	.007 (.006)
a								110.4 (659.9)	122.1 (702.0)	221.4 (749.8)
I-1								-.000 (.000)		-.000 (.000)
I-2									-.000 (.000)	-.000 (.000)
M-1								.000 (.000)		.000 (.000)
M-2									.000 (.000)	.000 (.000)
R^2	.197	.198	.238	.201	.244	.243	.246	.249	.253	.259
F	9.71†	8.10†	8.76†	6.13†	6.22†	6.92†	5.19†	5.26†	4.94†	3.60†
s.e.[b]	162.1	162.4	158.6	162.9	159.3	158.9	159.9	159.6	159.6	161.0

[a]Standard errors of regression coefficients appear in parentheses below each coefficient. Where a blank space appears the variable is not included in the equation. An * denotes significance at the .10 level. A † denotes significance at the .05 level.

[b]Standard error of estimate.